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ADDRESSES AND ORIGINAL ARTICLES

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BY MACDONALD CRITCHLEY, M.D. BRIST., F.R.C.P. LOND.,

JUNIOR NEUROLOGIST TO KING'S COLLEGE HOSPITAL; ASSISTANT PHYSICIAN TO THE NATIONAL HOSPITAL, QUEEN SQUARE.

LECTURE III.

Psychological Aspects.

ONE of the greatest problems in psychiatry concerns the nature and genesis of the various disorders of the mind associated with old age. Whether the analysis be carried out along pathological or clinical lines, it soon becomes apparent that numerous subgroupings are necessary.

In the briefest of descriptions, one may attempt some sort of classification as follows: simple senility (psychic senescence); senile dementia; arterio-sclerotic dementia; and the various presenile dementias.

A discussion of senile hysteria and other neuroses and psychoneuroses of advanced life would tempt us beyond the time at our disposal.

1. Lhermitte and Nicolas [137] apply the term *psychic senescence* to the pattern of psychological processes which is to be expected in healthy old age. The outstanding features include diminished acuity of memory, or better a loss of adherence to recent events; impaired faculty of rapid evocation of events; loss of fluidity; and weakness of creative imagination. Savage [138] adds the symptoms of restlessness and of disturbed sleep. In more severe forms, egocentricity, depression, and hypochondriacal tendencies may develop.

2. *Senile dementia* in its broadest sense may be best described in the words of the definition proposed in the manual of the American Psychological Association:

> "A well-defined type of psychosis which as a rule develops gradually, and is characterised by the following symptoms: impairment of retention (forgetfulness) and general failure of memory, more marked for recent experiences; defects in orientation and a general reduction of mental capacity; the attention, concentration, and thinking processes are interfered with; there is a self-centering of interests; often irritability and stubborn opposition; tendency to reminiscences and fabrications. Accompanying this deterioration there may occur paranoid trends, depression, confused states, &c. Certain clinical forms should, therefore, be specified but these often overlap."

These clinical variants are usually described as the confusional, maniacal, melancholic, and paranoid subtypes, in addition to the uncomplicated dementia senilis simplex.

Concerning the pathology of senile dementia, it must be admitted that there is no characteristic histological counterpart so that the diagnosis cannot be made with certainty upon microscopical examination alone. On the other hand, certain anatomical findings are commonly encountered although also occurring in conditions other than senile dementia. The characteristics of a senile brain will here be present but in a greater intensity. Brain atrophy, fatty and pigmentary degeneration, glial overgrowth are usually demonstrable to a marked degree. In particular senile plaques and Alzheimer's intracellular fibrillary changes are seen in profusion, to a much greater extent than in the brains of healthy old age. Exceptions to this general picture may be found and will be discussed more fully hereafter.

3. The *arterio-sclerotic dementias* differ radically from the senile deteriorations in ætiology, clinical aspects as well as in pathology. They do not necessarily belong to the senile age and may occur in unmistakable form in early adult life. Efforts have been made at various hands, to isolate clinical subtypes, each associated with a distinctive pathological process. Rhein, Winkelman, and Patten,[139] for instance, speak of arterio-sclerotic deterioration, progressive arterio-sclerotic psychosis, and arterio-sclerotic dementia, which they couple with a sclerosis of the larger vessels, of the smaller vessels, and of large and small vessels respectively. Other variants have been described at different times, so that such terms as "subcortical encephalitis" (Binswanger), "hypertensive encephalopathy" have arisen.

4. Scarcely any study has been made of the problem of the combination of senile with arterio-sclerotic dementia, although cases of such must actually outnumber the pure varieties. Whether the mental symptoms of cerebral arterio-sclerosis differ when they arise in youth, maturity, or old age; whether the presence of long-standing arterio-sclerosis favours the early and severe development of senile change are problems which are rarely discussed. Kraepelin, on histological grounds, has indeed suggested that arterio-sclerosis may facilitate involutional processes in the brain, and this suggestion is rather borne out by some of Grünthal's cases.

PRESENILE DEMENTIAS.

5. The various presenile dementias are very important in their possible bearing on the ætiology of the senile psychosis. Three well-defined types can be isolated—namely, Pick's disease, Alzheimer's disease, and presbyophrenia.

Pick's disease [140] is a slowly progressive dementia starting usually in the sixth decade and accompanied by focal manifestations; it is characterised pathologically by circumscribed and symmetrical areas of cortical brain atrophy.

Alzheimer's disease [141] is another example of dementia with focal signs, appearing usually between the ages of 40 and 60. The anatomical picture differs from that in Pick's disease in that brain atrophy is less intense and more generalised; the histological characteristics are those of an intense senile process greater as a rule than would be expected in a senile dement of a very advanced age.

Presbyophrenia. — This term was applied by Kahlbaum [142] to a special clinical variety of presenile dementia in which confusion, defective memory with confabulation, restlessness with euphoria, were prominent symptoms. The status of this disorder has been much discussed; some authors regard it as indistinguishable from Alzheimer's disease; others —basing their arguments upon the resemblance to Korsakow's psychosis—consider it a variety of polyneuritic mental disorder. Fischer and others believed that there was a particular pathological correlate to presbyophrenia and they associated this psychosis with the presence of senile plaques. Subsequent research has shown, however, that there is no direct connexion between this disease and the demonstration of plaques in the cerebral cortex, and indeed no clear-cut pathological picture has yet emerged.

* The Goulstonian Lectures delivered before the Royal College of Physicians of London on March 10th, 12th, and 17th, 1931. Lectures I. and II. appeared in THE LANCET of May 23rd and June 6th respectively.

Diffuse atrophic sclerosis of the senile cortex is a term applied by Claude and Lhermitte[143] to a variety of senile disorder which has more pathological than clinical claim to be relegated in a class apart. Confusional episodes standing out against a background of progressive dementia constitute the chief symptoms. Pathologically, these cases are distinguishable by the preponderance of neuroglial proliferation over other senile changes.

ÆTIOLOGY OF SENILE DEMENTIA.

The most obvious question arising in respect of the psychological disorders of old age concerns the exact relationship between senile dementia and senility. Is the one to be regarded as a simple exaggeration of the other? Or are other factors, endogenous or exogenous, present in the demented cases producing differences which are essential, and not merely those of degree?

The problem may be studied from both clinical and pathological angles. Ætiology offers a suggestive opportunity for investigation. If we could demonstrate in the previous history of the senile dement some events or circumstances absent from the normal cases, there would at once be an argument favouring an essential difference in quality between the two psychological states. Heredo-familial studies, pursued by such workers as Meggendorfer,[144] Weinburger,[145] Berze,[146] have demonstrated that in a large proportion of cases there is an obvious psychopathic taint among the patient's kinsmen. Meggendorfer has concluded that senile dementia is really a senile schizophrenia, symptoms of which remain latent until precipitated by the onset of involutional changes. It seems obvious that there are concerned in the development of senile dementia factors other than mere old age.

Exogenous processes are possibly concerned in the development of senile dementia, and chronic infection or intoxication may perhaps be important. Monakow for years taught that involutional changes in the choroid plexus impaired its efficiency as a barrier between blood and cerebro-spinal fluid; in old age, therefore, a danger arises of circulating toxins reaching the neuraxis. This might cause the clinical manifestations of senile dementia, and set up in the involuting cerebrum itself the particular tissue reaction characteristic of the senile brain.

Trauma is another possible minor factor in the ætiology of senile dementia. A case of Grünthal's is suggestive in this connexion: histological examination of the brain of one senile dement revealed a striking asymmetry in the distribution of the plaques. Instead of the usual correspondence in the number of plaques in the two hemispheres, there was a tremendous number in the anterior and middle regions of the right side. This area had been subjected to severe injury some year previously, and possibly constituted a *locus minoris resistentiæ*.

The histologist, too, finds this relationship between senility and senile dementia difficult to understand. There is no isolated microscopical criterion of dementia; each feature in the dement's brain can also be demonstrated in the cerebrum of healthy old age. The differences are entirely quantitative. Simchowicz, indeed, has affirmed that the brain of a relatively young senile dement is histologically indistinguishable from that of a healthy centenarian. In other words, senile dementia is merely an exaggerated and precocious old age.

Most other histologists, notably Grünthal, disagree with this hypothesis. While admitting that as a rule the microscopical picture of the dement's brain is merely an intensification of that of the normal senium, one recognises cases in which the reverse holds true. That is, a more intense tissue change may be found in the brain of a healthy old man than of a demented patient. Moreover, a few cases are on record of an entire absence of senile plaques from the brains of demented patients. Stief, Uyematsu,[147] and others have had this experience, although Grünthal criticises the adequacy of their technique.

The problem is still unsolved, but to-day the most popular view considers that senile dementia is not simply an exaggeration of the normal senium.

NATURE OF PRESENILE PSYCHOSES.

The nature of the presenile psychoses and their relation to senile dementia and to senility is at present uncertain.

We have noted that Alzheimer's disease does not differ pathologically from senile dementia except in intensity. Attempts have been made to establish various pathological criteria. Bielschowsky and Perusini believed the mere severity of the changes was characteristic of Alzheimer's disease, but it must be remembered that mild and early cases are sometimes encountered. Simchowicz believed these two psychoses could be distinguished under the microscope by the topographical distribution of the plaques; others have been unable to confirm this, however. The position to-day is that Alzheimer's disease can be separated from senile dementia only on clinical grounds, and here mainly on the earlier age of onset.

But to regard Alzheimer's disease merely as a premature senile dementia, as some have done, leaves unexplained why the morbid changes should be so severe.[148 149 150]

In Pick's disease, cell atrophy within delimited cortical areas, constitutes the only anatomical feature. Senile plaques and intracellular fibrillary changes are notably absent. The ætiology is unexplained; syphilis, alcoholism, and arterio-sclerosis play no part. The psychosis does not appear on pathological grounds to constitute a purely precocious senility, although the age of onset and the clinical aspect suggest this view. One learns very little from the topography of the cortical areas of atrophy; they appear to correspond neither with particular vascular territories, nor with Brodmann's cyto-architectonic areas. A suggestive hypothesis has been forwarded by Gans,[151] that Pick's disease might represent an abiotrophy, a delayed heredo-familial affection. Certainly a family psychopathic taint has been demonstrated in the cases described by Richter, Gans, Kufs, von Braunmühl, and by Pick himself, and within the last 12 months Grünthal[152] has described in detail the clinical and pathological findings in two brothers suffering from Pick's disease.

The Ageing of the Nervous System.

We have now considered the numerous abnormal neurological features which may be encountered in old age. The clinical aspect has been described and, where possible, the anatomical substratum discussed. Although the anomalies of the nervous system are so varied and manifold, some manifestations are obviously much commoner than others. Thus involuntary movements other than senile tremor, are among the rarest of the physical signs. Cerebellar disorders are relatively uncommon, while deterioration in the special sense apparatus is frequent. Pyramidal defects are much rarer than extra-pyramidal signs.

Sufficient has been said of the neuropathology of senility to emphasise that the ageing of the nervous

system is—from the anatomical standpoint—essentially a diffuse process. It is therefore difficult to understand why certain clinical disorders should be so much rarer than others, or why a uniform dissolution should manifest itself along particular clinical channels.

Perhaps the commonest clinical features in old age are the extrapyramidal symptoms. Present in slight degree in the healthy senium, they become so obvious in senility as to constitute a state of parkinsonism. Various writers—such as Lhermitte,[153] Freund and Rotter,[154 155] and de Giacomo, Umberto, and Gambina[156]—have stressed the frequency of such physical signs.

Foix and Nicolesco,[157] indeed, have argued that neuronic disintegration is expressed clinically in two chief directions, both of which comprise extrapyramidal features. They speak of these two groups as the "strio-cortical" and the "pallido-mesencephalic" syndromes. The former is characterised by poverty of ideation, increased tonus during activity, and exaggeration of the emotional facial movements. Voluntary movements are slow, feeble, and maladroit and there is a tendency towards catatonia; the gait is short-stepping and ataxic. Sphincter disorders are present. The speech is feeble, monotonous, and high-pitched. The pallido-mesencephalic syndrome is made up of rigidity, poverty of movement, and bradykinesis—amounting to a parkinsonian state.

The conception of Foix and Nicolesco is certainly too sweeping and is erected upon too flimsy a basis to be attractive. Anatomical structures are assumed by them, without sufficient justification, to be endowed with particular importance. Their communication illustrates, however, the frequency with which symptoms of an extrapyramidal order are encountered in senility.

The reason for this is not clear; some have thought that the extrapyramidal centres possess an inherent vulnerability towards involutional changes, so that they are affected earlier and to a greater degree. This explanation is unlikely, for we know that these centres are relatively early in development and should therefore prove more resistive against a diffuse process. Others have suggested that exogenous influences have previously attacked and injured the extrapyramidal system so as to produce an acquired debility therein. The common calcareous and ferruginous degeneration restricted to the blood-vessels of the globus pallidus might be the outward evidence of such a vulnerability.

Local Involution Within the Central Nervous System.

I have attempted to emphasise that in studying the neurological aspects of senility we are witnessing the results of a diffuse process. Thus changes are probably taking place simultaneously at all levels of the nervous system; the resultant clinical picture is a composite one and only a most approximate correlation is possible between particular symptoms and focal neuronic changes. Moreover, the cerebral vascular system is simultaneously undergoing an involution which will produce its own peculiar effects.

There is some reason to believe, however, that in exceptional instances a part only of the nervous system may be singled out for this involutionary change; or that a particular anatomical or physiological system may—as it were—grow old before the rest of the nervous system. In such cases we are tempted to postulate a limited viability inherent in certain regions whereby they decay at an exceptionally early date.

Several possible examples can be quoted. In paralysis agitans we see the gradual development in an elderly individual of the various symptoms and signs which we associate with extreme old age. Thus the usual parkinsonian tremor, rigidity, poverty of movement, and slowness, together with the bowed attitude and stance, bear a striking resemblance to the various motor disturbances which we commonly associate with senility. The symptoms of paralysis agitans, in fact, differ clinically from those in old age in two respects only: first, in their relatively early appearance, and, secondly, in their greater intensity. On pathological grounds, too, we see a striking resemblance between the pallidal changes in Parkinson's disease and those in advanced age. Possibly Parkinson's disease is actually a premature and exaggerated manifestation of old age limited to a certain motor system in the brain.

In the senile cerebellar atrophies we see, clinically, an exaggeration of some of the defects in coördination and equilibrium which are common in the aged. On histological grounds it is difficult to explain the pathology of these disorders except as a strictly circumscribed process indistinguishable except in degree from that present diffusely in the senium. Here, again, we may be dealing with a localised process of senility.

The nature of Pick's disease (circumscribed cortical atrophy of the brain) has always been obscure, and it is certain that syphilis, arterial degeneration, and alcoholism are not important ætiological factors. The atrophy itself differs in no way from that seen in older individuals, and it would be difficult to distinguish at autopsy the brain of a long-standing case of Pick's disease from one of senile dementia. The factors of (1) premature appearance—i.e., before plaques and other senile changes develop—and (2) focal distribution are the only distinctive features.

These three affections—namely, paralysis agitans, the delayed cerebellar atrophies, and Pick's disease—may well be selective involutional processes occurring somewhat prematurely within the nervous system. Whether this conception of precocious neuronic ageing and decay can be extended to include other neurological disorders is much more problematical. One is reminded in this connexion of Gowers's use of the term "abiotrophy" to describe a presumed limited span of life in certain neuronic systems in such disorders as amyotrophic lateral sclerosis and Friedreich's ataxia. Raymond[158] believed that in the heredo-familial ataxias there existed a premature ageing of various tracts or neurones within the central nervous system. In his own words—"the family diseases should be regarded as a premature physiological senescence of certain organic systems."

The doctrine of abiotrophy has been criticised as meaningless and speculative. Gowers, however, applied this term to a well-defined group of disorders and within this restricted zone his postulate remains a shrewd and useful hypothesis. The views of Raymond and Gowers are strongly supported by those rare—but important—instances already mentioned, of heredo-familial affections first appearing in middle or late life. Thus the families of Schuster and of Neff link up the common juvenile ataxias with the senile cerebellar disorders, and suggest that no sweeping distinction necessarily exists between the two types. Even more striking is the common familial occurrence of senile tremor in association with the juvenile, "essential," or pre-senile types of tremor. One has already noted the frequency with which careful inquiry into the family history of a patient with senile tremor reveals that other members

have been afflicted with a symptom of similar appearance, but developing earlier—in some members in maturity or late middle life, and in others in youth. In one family it may be possible to quote examples of each type.

Premature and Precocious Senility.

Although the problems attendant upon old age in general have been somewhat neglected, no lack of interest has been displayed concerning the premature appearances of the senile state. Indeed it has always been a topic of popular appeal especially in regard to the possibilities of treatment or prevention.

We may differentiate two chief groups of cases according to the age at which the marks of senility appear, thus "premature senility" may be applied to those examples of physical involutional changes coming on in the middle period of life, while to the rarer cases of senile appearances in youth or childhood the term "precocious senility" or "senium præcox" may be restricted.

The ætiology and manifestations of premature old age need not be detailed; the factors which seem to be important may be mentioned only. Thus, we recognise in some families an inherent resistance as it were against general involutional processes so that certain families are known to show the marks of old age at an unusually early date—just as other families are characterised by a vigorous longevity. Racial factors are extremely important and the resistance to old age changes displayed by many of the African negroes is striking. External circumstances are perhaps the most significant, however, in determining a premature senility so that a man's real age is determined less by the numerical passage of time than by the aggregate of his past illnesses. Chronic visceral disease is, in the majority of cases, an important factor in producing an early dissolution. Cardiovascular disease—and arterio-sclerosis in particular—can obviously be quoted in support of this view.

Another striking example of the premature entry of senile changes is seen in pituitary cachexia or Simmonds's[159] disease. As the result of disease of the anterior lobe of the hypophysis, there develops an extreme degree of wasting and asthenia, anæmia, loss of hair from the body and greying of the scalp hair, sexual hypoplasia, and changes in the skin, teeth, and nails. The general impression is one of advanced senility, occurring at a premature age. Other examples of endocrine disease are on record in which the premature development of senile changes is striking. Following the early descriptions by Claude and Gougnot, a syndrome of "pluriglandular insufficiency" is sometimes recognised, being characterised by cachexia, genital atrophy, stupor, depression, hypothyroidism, and premature senility.

In precocious senility we are dealing with a problem which might—if adequately studied—throw much light on the causes and processes of normal old age. Unfortunately, our knowledge of senium præcox is very meagre and is riddled with lacunes.

It is useful to distinguish three clinical subgroups—namely, (1) cutaneous geromorphism, (2) congenital ectodermal defects, and (3) progeria.

CUTANEOUS GEROMORPHISM.

Souques and Charcot,[160] in 1891, applied the term "géromorphisme cutanée" to a condition in which the skin shows at a very early age the characteristics of advanced life. Thus, changes set in at puberty, whereby the skin of the face, neck, the upper thorax, and the proximal portions of the limbs become atrophic and inelastic, hanging in folds over the deeper tissues. The superficial aspect is that of an aged individual. It is noteworthy that the various cutaneous appendages remain unaltered so that there is no whitening or falling out of the hair and no changes in the teeth or nails. Nor are the viscera or the blood-vessels in any way diseased; there is merely a process of senium præcox strictly limited to the dermis over certain bodily areas.

CONGENITAL ECTODERMAL DEFECTS.

Parkes Weber[161] has familiarised us with the clinical features of the so-called congenital combined ectodermal defect, which includes various abnormalities in the hair, teeth, nails, and sweat glands. The general appearances are those of advanced senility, and other hypoplastic changes may be demonstrable at times in the skin, mammæ, bones, and sex glands.

The earliest reference to this type of case I have succeeded in tracing was made by Easton in 1799.[162] He quotes a Polish woman who died in Koninia at the age of 108. When 94 years old she married a man of 105 by whom she is said to have borne three children. In each case the infant's hair is described as grey; there was a vacuity in their gums like that which appears after the loss of teeth, though they never had any. Their backs were bent and their complexions sallow, and, in short, they presented all the other symptoms of decrepitude. The accuracy of these statements is supported—we are told—by the local parish registers.

Another early case of similar nature has been recorded by Thurnham in 1848,[163] in the *Transactions* of the Medico-Chirurgical Society.

PROGERIA.

Closely analogous to these cases of combined ectodermal defects are the instances of precocious senility supervening upon a state of infantilism. There is almost certainly a close association with the cases of ectodermal defect, and it is probable that transitional cases link up the two conditions. One of the earliest cases of this type was recorded in 1886 in the *Med.-Chir. Transactions* by Jonathan Hutchinson.[164] Under the title of "Congenital Absence of Hair and Mammary Glands, with Atrophic Condition of the Skin and its Appendages," he recorded a boy of three and a half years whose wrinkled and old-mannish appearance suggested senilism. From the account of his case one would have relegated it to the class of combined ectodermal defects, but we learn that 12 years later the same patient was studied and described by Hastings Gilford,[165] who gave the title "progeria" to this condition of premature senilism. Since that date other cases have been put on record so that we can recognise a common picture. In the general attitude and bodily conformation, in the facial appearance with the atrophic wrinkled skin and emaciation, the baldness or greying of the scalp hair, the degenerative alterations in the cardiovascular system, we see a typical case of senility in miniature.

Despite the superficial resemblances to the processes of normal old age shown by these three groups of cases we cannot, on the slender data available, pursue the analogy very far. Until we have considerably more information, especially of a pathological nature, we cannot draw any helpful conclusions. Possibly the resemblance is merely superficial and not an index of a far-reaching relationship. We need information as to the type of intercurrent illness to which these individuals are liable; as to whether

such typical old age affections as senile tremor, paralysis agitans, cerebral softenings are ever encountered. Further examinations of the nervous system, as well as psychological investigations, are urgently needed in such patients.

Still more striking is the lack of pathological research in cases of senium præcox; as far as I can gather only one autopsy has been made and no histological examination of the nervous system has ever been carried out in a case of progeria. It would be obviously of value to determine whether or not the characteristic findings such as we have detailed are demonstrable in the brain and spinal cord; whether senile plaques or Alzheimer's intracellular changes are present or not. On these points one must simply wait for information which would probably throw light upon the nature of so-called physiological old age.

One final point arguing that the analogy between precocious senility and normal old age is not far-reaching, lies in the traits of infantilism which are demonstrable in the former. The child with progeria is not so much one which has run through the gamut of the years with astonishing rapidity, but rather one who has, in some respects, never grown up. In many ways the patient has skipped an epoch or a decade. These are points which are readily demonstrable clinically—not only in the physical examination but also in the execution of the Binet-Simon intelligence tests. From an anatomical standpoint they have been demonstrated by Keith [166]; from his most detailed study of the skeleton of an individual dying at the age of 18 of progeria, he was able to point out that most of the osseous abnormalities betrayed a state of infantilism while others were the index of a premature development.

Relationship of Arterio-sclerosis to Senescence.

When one considers the various neurological syndromes common in old age, it is found that many of them can be directly attributed to lesions of the cerebral blood-vessels. Thus, the hemiplegias and paraplegias of old age, possibly also senile tremor and epilepsy, are associated with areas of ischæmia within the central nervous system. Possibly some of the minor signs of so-called healthy old age—such as alterations in the tendon reflexes, loss of vibratory sensibility, slowness of movement, inelasticity of gait, and so on—are also produced by slighter degrees of chronic malnutrition.

Even when there is no macroscopical evidence of arterio-sclerosis or concomitant lesions, it is at least possible that a condition of capillary fibrosis may exist causing a prolonged circulatory inadequacy. It might also be suggested that no primary neuronic decay can be recognised in the senile brain which is strictly independent of vascular degeneration.

Can we extend this conception and argue that the ageing of the nervous system depends upon vascular deterioration? In other words, is Cazalis's aphorism . . . "a man is as old as his arteries" strictly true? If this view is correct, then the symptomatology of cerebral arterio-sclerosis should be identical with that of senility. There should exist no senile manifestation which is not also seen in cerebro-vascular disease, and, conversely, no sign or symptom in the arteriopath which may not also occur in the aged. Moreover, this parallelism would be independent of the age of the individual, and we should expect the marks of senility in the arterio-sclerotic of middle life. This, of course, is not altogether the case. In those rare cases of senile vascular disease in childhood (Hughes and Perry [167]) there is not necessarily a precocious senility. There are numerous differences between the clinical aspects of the aged and the arteriopathic, although the superficial resemblance may be great. The psychiatrist will confirm this in pointing out that arterio-sclerotic dementia and senile dementia are not identical.

Pathological study of the brain in cases of diffuse cerebral arterio-sclerosis emphasises the distinction. We do not encounter senile plaques, Alzheimer's tangles, diffuse parenchymatous atrophy with pigmentary degeneration of the nerve-cells unless the individual happens to have been aged as well as arterio-sclerotic. The histology of the two conditions is distinct.

In theory, therefore, there are two separate conceptions, the neurology of old age and the neurology of cerebral arterio-sclerosis, each with its own clinical picture, and its own pathology. We must imagine a hypothetical senile brain without vascular disease, just as we often see arterial degeneration in the brain of a young subject.

At the same time we must admit that the distinction is more academic than practical, since in the great majority of cases the processes of ageing operate simultaneously on both parenchyma and blood-vessels of the brain.

Nature of Old Age Considered from a Neurological Standpoint.

From earliest times writers on the subject of old age have debated whether involution and decay are to be regarded as physiological or pathological processes. It may be convenient to approach this question from the viewpoint of the neurologist and to determine what light is afforded by a study of the senile nervous system.

The argument of those who maintain that old age is an inevitable and essentially normal phenomenon, can be stated in the words of Prof. Warthin [168]:—

> "The senescent process is potent from the very beginning," he says . . . "involution is a biologic entity equally important with evolution . . . its processes are as physiologic as those of growth . . . . It is, therefore, inherent in the cell itself, an intrinsic, inherent, inherited quality of the germ plasm, and no slur or stigma of pathology should be cast upon this process . . . . Senescence is due primarily to the gradually weakening energy charge set in action by the moment of fertilisation."

Or, to quote Prof. Marinesco [169]: " . . . All living matter obeys the universal law of evolution. . . . Cells appear, multiply, increase, decay, and die."

Instances of longevity occurring in certain families or in particular races support this view, and suggest that there is normally a certain expectation of life which in exceptional cases is extended a little. Ophthalmologists tell us that the crystalline lens of the eye diminishes in elasticity with advancing years. This constant and slowly progressive change commences in the second decade of life, indicating that involution sets in at a very early date.

The opposing view regards old age as a disease in itself, and looks upon the senile histological changes in the various organs as evidences of multiple traumata. These represent scars, as it were, indicating the ravages of previous infections, disease, toxins, faulty habits, and so on. Such an opinion is centuries old; Cicero [170] declared "that every decay and strength (in old age) results more often from the vices of youth than from age, for a licentious and unbridled youth bequeaths a worn-out constitution to old age." Sir Clifford Allbutt [171] said: "In medicine we do not count the ages of people by the revolutions of the earth around the sun, but we

measure them by the revolutions of their own morbid processes."

Metchnikoff has familiarised the laymen with this hypothesis, but one of the most eloquent advocates of this view is Prof. Tilney.[172] In a recent and most inspiring address he takes up the standpoint that the old brain is actually a diseased brain.

> "No evidence thus far adduced," he says "is sufficient to convince us that there is such a thing as a strictly old brain. The brain in aged people may present certain morbid changes, but these are in their turn incident to many pathological assaults upon the tissues sustained during life which, in some individuals more, in others less, are in all alike the consequence of infections, intoxications, or other morbid influences . . . All of this is a strong argument in favour of the theory which holds old age in the brain, as in other organs, to be the result of life's successive and cumulative intoxications," and later . . . . "According to this view, old age has a pathological background. It arises from definite conditions which may be combated or corrected."

I have stated the two divergent viewpoints and have quoted freely from the opposing advocates. As in most cases where opinions are diametrically opposed, the truth is probably a compromise between the extremes. Even if it be true that the "aged brain is one which has been diseased, abused, or neglected" (Tilney), one must admit a limited span of life to every living cell and organism. Otherwise a perfect prophylactic régime, capable of excluding every noxious influence, would confer immortality. Almost certainly the two factors are mutually operative, the inherent span of existence and the devastating influence of exogeneous factors.

It is impossible at present to decide which factor is the more powerful. An investigation into cerebral pathology offers, however, a hope of throwing some light upon this problem. I would suggest three avenues along which research might be helpful.

(1) Certain pathological features which are commonly held as characteristic of old age—such as senile plaques, Alzheimer changes, axonal swelling of the Purkinjé cells—are very occasionally seen in the brains of young subjects. These exceptional cases should be studied with the greatest care as suggesting that these so-called "senile changes" are merely the index of a particular type of tissue reaction.

(2) The tissue reaction of the senile brain to known toxins should be studied and compared with the response of a mature tissue against the same toxin. A comparison, for example, of the histology of general paralysis of the insane in the adult, in the child and in the aged, offers an admirable opportunity of contrasting the reactions of a mature, immature, and senile tissue respectively.

(3) Further histological examinations should be made of the brains of normal old people and comparison made with the changes in senile dementia. The object of this should be to determine, not how much histological change is present, but how little. It is highly important to discover the minimum change that can be encountered in the brain of a healthy centenarian.

It may be asked whether such investigation is worth while or if the problem is not merely academic. The research is essentially practical in its bearings, for by determining which histological features are indicative of exogenous influence and which are the expression of a simple involution, the date of onset of old age may be determined. The span of life may well prove to be far beyond the estimate of the Psalmist, as judged by the inherent viability of the tissues. Moreover, by determining the exact part played by external influences in shortening life, steps may be essayed to prevent or to counteract these factors. Old age, in fact, may be the result of two processes, one endogenous and inevitable and the other exogenous and avoidable. Histological research may determine the importance of the latter.

It is interesting and somewhat chastening to recall that this was precisely the conclusion arrived at by Andreas Laurentius.[173] In 1599 he wrote . . . "The causes of our dissolution are either inward, or outward: the inward are borne with us, abide with us dailie, and accompanie us even to the grave. The outward doe spring and rise from without, compasse us on every side, and though a man may keepe himselfe from some few, yet there are an infinite number besides, which cannot be avoyded. Those which are borne and bred with us are two, the contrariettie of the elements, whereof our bodies are framed, and the working of our own naturall heate."

I may perhaps be allowed in conclusion to quote from Tilney once more: "Some day, people will awaken to the fact that they have been missing the greatest constructive opportunities. . . One liberally supported and effective brain institute would prove an incomparably more profitable investment for civilisation than the most powerful battle-fleet that ever sailed the seas. The political party which will have the foresight and humanity to introduce into its platform an article advocating and supporting the longer and better use of the human brain will offer a worthy issue to its electorate."

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ON ACUTE RHEUMATISM FOLLOWING TONSILLITIS.

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For many years it has been recognised that there is a close association between infection of the throat and acute rheumatism—that is to say, acute rheumatic inflammation of the heart or joints. An important contribution to this subject has recently been made by Schlesinger,[1] who in a series of 22 children under his care at the West Wickham Convalescent Heart Home made the observation that a definite interval intervenes between the onset of a throat infection and the reappearance of acute rheumatic symptoms—an interval of approximately 10–21 days. During this interval the throat symptoms subside and the child seems to have made a complete recovery from the throat infection, but this is shown not to be the case when in two or three weeks fresh rheumatic manifestations arise. A proper understanding of the changes that are taking place in the child during this "silent" interval would almost certainly reveal much of the pathogenesis of rheumatic heart disease.

Sore-throats in Two Institutions.

One of the advantages of a convalescent home over a hospital is that the patients can be kept under medical observation for periods extending over many months, and incidental sore-throats and their sequelæ can be studied. In the ordinary hospital children are not admitted to the wards because of sore-throats, and generally do not come under observation until the rheumatic inflammation which follows the sore-throat has already developed. Furthermore, the throat infection is often a mild affair; there may be no complaint of sore-throat, and only the fact that the temperature rises two or three degrees for a day or two for no obvious cause leads to an examination of the throat. These mild pyrexias would usually be missed at the child's own home, but at a convalescent home the daily temperature record directs the attention of the doctor to them.

During the last two years the opportunity has arisen of observing children with rheumatic heart disease over prolonged periods. This has been possible at the Cheyne Hospital for Children, Chelsea, where one ward of 25 beds has been devoted to cases of this nature, and also at the Lancing Convalescent Heart Home, where the 60 beds are filled from the rheumatic clinic at the Hospital for Sick Children, Great Ormond-street, with cases of early and mild cardiac rheumatism. During this period 34 children have suffered from sore-throats or rheumatic relapses at these two institutions, and the salient features of these cases are presented in the Table.

Before proceeding to analyse the contents of this Table, that part of the history of the first case which is germane to this paper will be given in more detail, since it affords a good example of a rheumatic relapse following upon a sore-throat.

Case 1 was a boy, aged 11 years, who when 8 years old had rheumatic fever, followed by aortic and mitral disease. His tonsils had been thoroughly enucleated some time before his attack of rheumatic fever. He was admitted to the Cheyne Hospital when 10 years old, and made steady progress, so that by February, 1929, he was getting up preliminary to going home. On March 4th he complained of a sore-throat and had a temperature of 102° F. The routine throat-swab for diphtheria bacilli proved to be negative, and the temperature settled back to normal in 24 hours. The boy remained quite well for a fortnight, but on March 18th the temperature rose again, and four days later pericardial frictions became audible. The boy's condition steadily became weaker, and he died on April 2nd. The temperature and pulse chart is reproduced (Fig. 1) in order to demonstrate the evanescence of the sore-throat, and the apparently normal period which followed for two weeks before the onset of the fatal pericarditis.

Returning to the Table, the first 29 cases comprise all the instances of sore-throat which have arisen at the Cheyne Hospital during the last two years, and also all the cases of rheumatic relapse at that hospital, whether or not they were preceded by clinical evidence of sore-throat. Of these 29 cases, 19 suffered from a rheumatic relapse which was preceded in 14 instances by a brief febrile disturbance, lasting as a rule about 48 hours, and occurring at an interval which varied from 9 to 25 days before the rheumatic relapse. This preliminary febrile disturbance I have called the "initial fever." The initial fever was accounted for in five cases (6, 9, 14, 24, 27) by follicular tonsillitis, in five others (1, 7, 19A, 20, 29) by a sore and reddened throat, while in four cases (4, 5, 10, 28), although an initial fever occurred, no obvious cause could be found on clinical examination to account for it. Of the remaining five children who suffered from an acute rheumatic relapse, three (8, 13, 21) began their relapse by suffering from a sore-throat, but the rheumatic relapse occurred synchronously with the throat infection. In one child (23) the relapse consisted of the development of rheumatic nodules five weeks after the initial fever due to sore-throat, but this child received aspirin grs. 30 daily for a month after the sore-throat, and as will be shown later the

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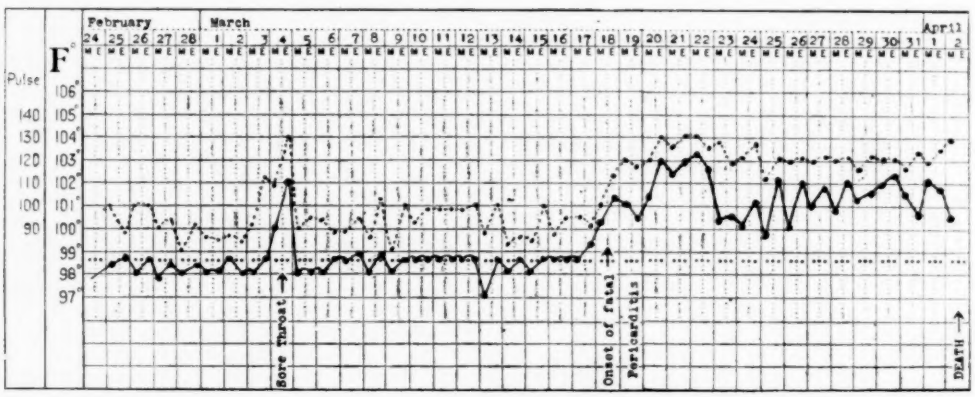
use of this drug may have delayed the relapse or so modified it as to make it uncertain how long after the initial fever the rheumatic relapse began to develop. The other child (Case 25) suffered from a relapse of rheumatic pancarditis, which proved fatal, but in her case there was no initial fever nor any evidence of infection of her throat. Except for the fact that this child's last illness happened while several other children in the ward were suffering from an epidemic of sore-throat, her rheumatic relapse seemed to arise without cause.

The last five cases of the Table are children who had sore-throats while at the Lancing Heart Home. Three of these children experienced an acute rheumatic relapse which began 14, 18, and 24 days respectively after the initial fever.

Analysis of the 34 children in the Table supports Schlesinger's observation that if a child has already had a rheumatic infection, then the occurrence of an acute infection of the throat is likely to be followed by a rheumatic relapse in roughly 10 to 21 days.

FIG. 1.



Temperature and pulse chart in Case 1. (Mitral stenosis and aortic regurgitation. Tonsils removed.)

With the exception of the three cases in which rheumatic relapse coincided with the throat infection, the silent period between the initial fever and the rheumatic relapse lay, in my cases, between 9 and 25 days. It is interesting to note in passing that of the 44 instances of acute rheumatic relapse compiled from Schlesinger's cases and those in this paper, not once did the relapse after the throat infection take the form simply of chorea, an observation which suggests that although throat infection is a factor in the production of rheumatic carditis and arthritis, it is of less importance in producing chorea.

Tonsillectomy and Rheumatic Relapses.

In the third column of the Table is set out the state of the tonsils before the initial fever took place, and it will be seen that relapses occurred whether the tonsils had been removed or not. Of the 19 children at the Cheyne Hospital who suffered a rheumatic relapse, 6 (31 per cent.) had previously undergone complete tonsillectomy, 2 (11 per cent.) had obvious tonsillar remnants, and the remaining 11 (57 per cent.) had not had their tonsils operated upon. These percentages may be compared with those obtained from an analysis of the throat condition in all the rheumatic children admitted to Cheyne during the last two years. During this period 89 children have been admitted; of these, 30 (33 per cent.) had previously undergone complete tonsillectomy, 7 (9 per cent.) had obvious tonsillar remnants, and 52 (58 per cent.) had not had their tonsils operated upon. Although the number of children is small, the percentages approximate so closely that the evidence seems to indicate that previous tonsillectomy is of no value as a safeguard against rheumatic relapses.

Aspirin as a Prophylactic against Relapses.

It is well known that an injection of horse serum in man may be followed in ten days or so by the appearance of serum sickness, the symptoms including urticaria and a transient non-suppurative arthritis. Derick, Hitchcock, and Swift [2] have shown that if aspirin or neocinchophen (Tolysin) is given in sufficient amount over a period of ten days or so immediately following the administration of horse serum, the subsequent serum sickness can be modified to the extent of preventing the arthritis, although the urticaria is not affected. The dose of aspirin employed amounted to 5 or 6 g. daily—a dose which would be very large for an adult, and certainly more than one would give to a child. The explanation which the authors advance is that the antirheumatic drugs prevent the formation of *circulating* antibodies normally produced by the presence of a foreign serum, the arthritis of serum sickness being held to be due to the clash between these two substances. The urticaria is not affected because it is due, not to *circulating* antibodies, but to antibody produced within the reticulo-endothelial cells of the skin.

An analogy between the administration of serum and the development of serum sickness on the one hand, and sore-throats and rheumatic relapses on the other hand has been drawn by Schlesinger, and following the work of Derick, Hitchcock, and Swift, he has attempted to prevent rheumatic relapses by giving aspirin as soon as the sore-throat has appeared, continuing the drug for a month or so. In 16 cases of tonsillitis in rheumatic children treated in this way, he states that no serious rheumatic relapse followed.

Hoping for the same beneficial results from aspirin, the drug has been given to seven rheumatic children at Cheyne, beginning its administration as soon as the initial fever and sore-throat appeared. The dosage and duration of administration of the drug are

Table showing the Relationship between "Sore-throats" and Rheumatic Relapses in 34 children, all of whom had already shown evidence of rheumatic infection. Cases 1 to 29 occurred at the Cheyne Hospital, Chelsea, and Cases 30 to 34 at the Lancing Convalescent Heart Home. Cases 1, 9, 10, 6, and 7 have previously been quoted in Schlesinger's article (Arch. Dis. Child., 1930, v., 411).

Case	Previous heart condition and duration.	Condition of tonsils before relapse.	(*a*) Date, (*b*) cause of, and (*c*) treatment after initial fever.	Days before relapse	Date of onset and nature of rheumatic relapse.	Case
1	Mitral stenosis; aortic regurg. (3 y.).	Removed.	(*a*) 4/3/29. (*b*) Sore-throat.	14	17/3/29. Pericarditis (fatal).	1
2	Mitral regurg. (7 y.).	Enlarged, septic.	(*a*) 1/4/29. (*b*) Follicular tonsillitis.	—	—	2
3	Mitral regurg.	"Removed" remnants.	(*a*) 25/4/29. (*b*) Sore-throat.	—	—	3
4	Mitral regurg. (18 m.).	Enlarged, septic.	(*a*) 12/5/29. (*b*) Temp. 99·5°. ? cause.	20	31/5/29. Pericarditis.	4
5	Same case as 3.	—	(*a*) 1/6/29. (*b*) Temp. 102°. ? cause.	14	14/6/29. Rheumatic arthritis.	5
6	Mitral regurg.	Healthy.	(*a*) 3/6/29. (*b*) Follicular tonsillitis.	17	19/6/29. Pericarditis (fatal).	6
7	Mitral stenosis (4 y.).	Removed.	(*a*) 7/10/29. (*b*) Sore-throat.	21	27/10/29. Pericarditis (fatal).	7
8	Mitral and aortic regurg. (5 y.).	Tonsils small.	(*a*) 11/10/29. (*b*) Throat red, no exudate.	0	Rheumatic arthritis from 11th until 18th.	8
9	Mitral stenosis (4 y.).	Enlarged, septic.	(*a*) 11/10/29. (*b*) Follicular tonsillitis.	19	29/10/29. Arthritis and cardiac dilatation. Nodules, Nov. 26th.	9
10	Mitral regurg. (6 m.).	Removed June, 1929.	(*a*) 17/10/29. (*b*) Temp. 102°. ? cause.	21	6/11/29. Carditis.	10
11	Mitral regurg. (6 m.).	Removed 1927.	(*a*) 14/11/29. (*b*) Throat sore, red. (*c*) Aspirin grs. 10 bis die, 28 days.	—	—	11
12	Mitral regurg. (3 y.).	Enlarged, septic.	(*a*) 15/11/29. (*b*) Throat sore, red, no exudate.	—	—	12
13	Same case as 12.	—	(*a*) 9/2/30. (*b*) Throat red, mucopus in pharynx. (*c*) Aspirin grs. 10 ter die, 8 days, then grs. 5 ter die for 6 weeks.	0	Pericarditis synchronous with sore-throat.	13
14	Mitral regurg. (2 y.).	Big tonsil remnants.	(*a*) 28/2/30. (*b*) Follicular tonsillitis. (*c*) Aspirin grs. 10 ter die, 28 days.	12	11/3/30. One day of fever to 100° F. Aortic regurg. appeared 4 weeks later.	14
15	Mitral regurg. (2 y.).	Small, healthy.	(*a*) 2/3/30. (*b*) Throat sore, red, no exudate. (*c*) Aspirin grs. 5 bis die, 28 days.	—	—	15
16	Same case as 15.	—	(*a*) 21/4/30. (*b*) Follicular tonsillitis. (*c*) Aspirin grs. 5 ter die, 28 days.	—	—	16
17	Mitral and aortic regurg. (18 m.).	Enlarged, clean.	(*a*) 7/6/30. (*b*) Temp. 102° F. Throat red and sore.	—	—	17
18	Mitral regurg. (5 y.).	Removed.	(*a*) 23/8/30. (*b*) Temp. 101° F. Throat red and sore.	—	—	18
19	Mitral regurg. (9 m.).	Healthy.	(*a*) 11/10/30. (*b*) Tonsillitis.	—	Second attack. Tonsillitis in 21 days. (Vide Case 19A).	19
19A	Same case as 19.	—	(*a*) 31/10/30. (*b*) Second attack. Tonsillitis.	16	15/11/30. Pericarditis.	19A
20	Mitral regurg. (9 m.).	Small, healthy.	(*a*) 11/11/30. (*b*) Tonsillitis.	15	25/11/30. Pericarditis, gross dilatation.	20
21	Mitral stenosis (4 y.).	Small, healthy.	(*a*) 18/11/30. (*b*) Follicular tonsillitis.	0	Continuous illness from 18th until 4/12/30: fatal myocarditis.	21
22	Mitral regurg. (3 y.).	Small, healthy.	(*a*) 22/11/30. (*b*) Throat red and sore.	—	—	22
23	Mitral stenosis (3 y.).	Removed.	(*a*) 26/11/30. (*b*) Sore-throat. Pus in tonsil beds. (*c*) Aspirin grs. 10 ter die for 28 days.	?	Off aspirin 24/12/30. Nodules appeared 29/12/30. No active carditis.	23
24	Mitral stenosis (3 y.).	Small, healthy.	(*a*) 1/12/30. (*b*) Follicular tonsillitis. (*c*) Aspirin grs. 10 ter die, 24 days (tendency to vomit after aspirin).	11	11/12/30. One day's fever on 11th. Followed in two weeks by fatal pericarditis.	24
25	Mitral regurg. (4 y.).	Removed.	—	—	6/12/30. Onset of fatal carditis, with pericarditis. No initial fever.	25
26	Same case as 14.	—	(*a*) 7/12/30. (*b*) Follicular tonsillitis.	—	—	26
27	Mitral stenosis (6 y.).	Enlarged.	(*a*) 11/12/30. (*b*) Follicular tonsillitis.	14	24/12/30. Carditis and ? rheumatic pneumonia. Fatal.	27
28	Same case as 15.	—	(*a*) 24/12/30. (*b*) Temp. to 101° F. ? cause.	9	1/1/31. Carditis. Developed aortic regurg.	28
29	Mitral regurg. (3 y.).	Removed.	(*a*) 8/1/31. (*b*) Temp. 102° F. Throat red.	25	1/2/31. Fever and pains in arms.	29
30	Nil cardiac, old chorea.	Healthy.	(*a*) 23/2/29. (*b*) Tonsillitis.	18	12/3/29. Fever and myocarditis.	30
31	Mitral and aortic regurg. (2 y.).	Removed.	(*a*) 25/10/29. (*b*) Sore-throat.	24	18/11/29. Carditis.	31
32	Chorea, nil cardiac.	Enlarged, septic.	(*a*) 17/3/30. (*b*) Tonsillitis.	—	—	32
33	Chorea, nil cardiac.	Small, healthy.	(*a*) 19/11/30. (*b*) Follicular tonsillitis.	—	—	33
34	Mitral regurg. (6 y.).	Small, healthy.	(*a*) 20/11/30. (*b*) Follicular tonsillitis.	14	3/12/30. Urticaria over elbows and ankles then carditis.	34

y. = years; m. = months

shown in the fourth column of the Table. In Case 13, although aspirin was given at the onset of the sore-throat, rheumatic pericarditis developed at the same time as the tonsillitis, leaving no time for the aspirin to prevent the rheumatic relapse, and this case may therefore be disregarded. Case 24 was generally sick once a day while on aspirin, and probably did not absorb more than about two-thirds of the amount of aspirin given in the 24 hours, but with that exception the drug was tolerated perfectly well.

In three children (Cases 14, 23, 24) aspirin seemed to modify the rheumatic relapse, but did not prevent it. Thus in Case 14, pyrexia appeared for 24 hours on the twelfth day after the beginning of aspirin therapy; otherwise this child seemed to have avoided a relapse, but within a fortnight of the discontinuance of aspirin it became evident that the aortic valve was affected, and it is probable that the rheumatic process was attacking the aortic valve while the child was under the influence of the drug. In Case 23 no signs of rheumatic relapse appeared while aspirin was being given, but five days after the drug was stopped rheumatic nodules were found—the child had been under observation for six months previously and had never had nodules. In Case 24 pyrexia appeared for 24 hours on the eleventh day of aspirin therapy, and a fortnight later, while still receiving aspirin, the child developed rheumatic pericarditis, which proved fatal.

Three of the "aspirinised" children (Cases 11, 15, 16) remained free from rheumatic relapse after their initial fever. It must, however, be pointed out that in nine other children (Cases, 2, 3, 12, 17, 18, 22, 26, 32, 33), although no antirheumatic drug was employed, the sore-throat was not followed by a rheumatic relapse. From these few cases it is impossible to draw a conclusion. It may be that those children who relapsed after receiving aspirin did not receive a large enough dose of the drug. The first indication of the beginning of a relapse is a rise of temperature and pulse-rate, but in the aspirinised children the temperature remains at about 97° F. even in the face of acute rheumatic carditis. The temperature chart in these cases may lull one into a sense of false security, later events showing that while the child was under the influence of aspirin the rheumatic lesion was progressing. The prophylaxis of rheumatic relapses, by giving a course of aspirin after sore-throats, seems to offer a promising field of research.

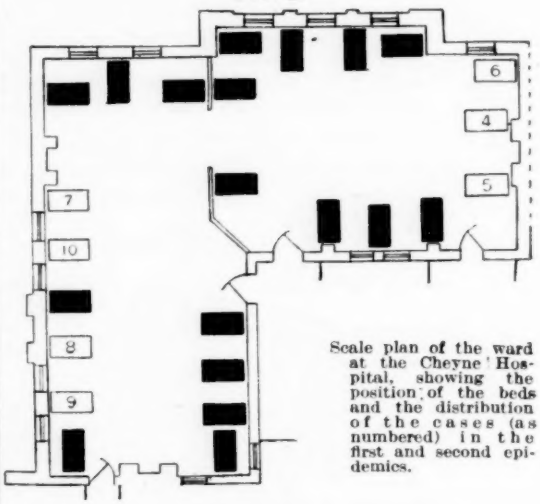
Epidemics of Sore-throat and Rheumatic Relapses.

The cases in the Table have been tabulated in the chronological order of the initial fever, in order to demonstrate that sometimes the initial fevers and the rheumatic relapses constituted small epidemics.

The first epidemic at the Cheyne Hospital was composed of Cases 4, 5, and 6. Case 4 developed a temperature on May 5th, 1929, and began pericarditis on May 31st. On the next day the child in the next bed (Case 5) developed a temperature of 102° F. for 24 hours, and two days later, on June 3rd, the child in the bed on the other side of Case 4 developed tonsillitis (Case 6). Case 5 went on to suffer from acute rheumatic arthritis, and Case 6 from fatal pericarditis. Fig. 2 is a scale plan of the ward at Cheyne and shows the position of the beds. It can be seen that in this first small epidemic the affected children were congregated closely together.

A second similar epidemic occurred in October, 1929, affecting Cases 7, 8, 9, and 10. Case 7 began a sore-throat on Oct. 7th, and died from a relapse of pericarditis. Four days later, on Oct. 11th, Cases 8 and 9 developed sore-throats, followed by acute rheumatic arthritis, and in Case 9 by carditis as well. Six days later, on Oct. 17th, Case 10 had pyrexia, and three weeks later was ill with acute carditis. The beds which these four children occupied are indicated in Fig. 2, and it can be seen that they were in close proximity to each other. Judging from the proximity of the children in each of these little

FIG. 2.



Scale plan of the ward at the Cheyne Hospital, showing the position of the beds and the distribution of the cases (as numbered) in the first and second epidemics.

epidemics, it seems likely that an organism, responsible for the sore-throat, was passing from child to child, conveyed possibly by droplet infection with or without the aid of a carrier.

One year after the second epidemic, on Oct. 11th, 1930, Case 19 developed tonsillitis, which recurred on Oct. 31st. During the next two months ten other children suffered from pyrexia with clinical evidence of acute throat infection, giving rise to a somewhat protracted epidemic. Of these 11 children, in eight the throat infection was followed by an acute rheumatic relapse. The bacteriology of the preliminary throat infection was investigated by Dr. W. R. F. Collis, whose paper is published with this one, but it may be mentioned here that an organism common to all the 11 cases was obtained from the throat cultures. The same organism was also recovered from a nurse who developed follicular tonsillitis on Nov. 21st, three weeks after the epidemic had commenced. It is likely that she acted as a carrier of the organism, since the children affected after she was taken ill were scattered throughout the ward.

Papers describing epidemics of acute rheumatism have appeared from time to time, and are summarised in a paper by Boas and Schwartz [3] in 1927. Grenet [4] as a result of his experiences in five epidemics in the French forces during the war, concluded that acute articular rheumatism was a contagious disease. Hiller and Graef [5] described an epidemic occurring in a convalescent home for rheumatic children near Chicago in 1927. In the Milroy lectures in 1930, Glover [6] adduced evidence to show that acute rheumatism could be regarded as an infectious disease, the virus being conveyed by droplet infection.

Evidence has been advanced in this paper to show that acute rheumatic relapses are often preceded at a definite interval by sore-throats, and that the sore-throats may sometimes assume epidemic characters.

It is the preliminary sore-throat which properly should be regarded as the infectious element in acute rheumatism, the sore-throat spreading from case to case probably by droplet infection; but the development of acute rheumatism after the initial throat infection appears to depend upon some altered condition of the individual which enables products from the sore-throat to set going an acute rheumatic reaction. The rheumatic reaction, whether arthritic or cardiac, has no more claim to be considered infectious than has, for example, post-diphtheritic paralysis.

Conclusions.

(1) Relapses of acute rheumatic arthritis or carditis are often preceded by an initial fever—usually demonstrably due to nasopharyngeal infection—at an interval of one to four weeks beforehand. Occasionally the rheumatic relapse occurs synchronously with the throat infection. (2) The removal of the tonsils does not influence the likelihood of a rheumatic relapse. (3) The use of aspirin as a prophylactic measure against rheumatic relapses after throat infections is mentioned. Further investigation on this point is required. (4) The element of infectiousness in acute rheumatism lies in the preliminary throat infection, and these throat infections may assume epidemic proportions.

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ACUTE RHEUMATISM AND HÆMOLYTIC STREPTOCOCCI.

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IN 1900 Poynton and Paine[1] isolated a streptococcus from the throat of a patient suffering from acute rheumatic fever accompanied by tonsillitis and with this organism produced experimental arthritis. This pioneer work served to emphasise the association between acute rheumatic fever and throat infection, but it is only recently that this association has been studied from the epidemiological point of view. Glover,[2] in his Milroy Lectures of 1930, described various epidemics of tonsillitis and rheumatic fever in semi-isolated communities at Army and Air Force establishments. He showed that the peaks of the tonsillitis epidemics were followed after some two weeks by the peaks of the rheumatic fever epidemics. At Halton, out of a total strength of 3530, 427 boys got acute tonsillitis, and of these 41 showed subsequent symptoms of acute rheumatic fever. He found that there was a correlation between overcrowding, tonsillitis, and rheumatic fever.

Schlesinger,[3] while in charge of a large group of rheumatic children at the West Wickham Home during the last few years, has made some very important and original observations on the epidemiology of acute rheumatism. Each winter an epidemic of nasopharyngeal infection occurred in the wards of this home among the convalescent children. Recovery from these attacks of sore-throat was apparently complete, but after a "silent" period of 10–21 days a certain percentage (36 per cent.) of cases developed acute rheumatic cardiac relapses. It was observed also that if aspirin was given in large doses at the time of the initial sore-throat and continued for some weeks subsequently relapses did not occur.

Sheldon (in the paper preceding this) confirms the general principles of these observations. He describes similar epidemics of sore-throat which have occurred among rheumatic children in different convalescent homes, and has noted in most of his cases the same silent period before the appearance of rheumatic symptoms.

Tonsillitis has long been recognised as an important factor in the ætiology of acute rheumatism, and it has been surmised that the tonsil is one of the principal foci of entry of the rheumatic virus. Though the hæmolytic streptococcus is the chief cause of acute tonsillitis the possibility of this organism being associated with rheumatic fever was not definitely raised until Coburn's[4] work appeared in January of this year, though Dr. F. Griffith[5] investigated in April, 1930, an outbreak of tonsillitis at a public school which was followed in several instances by primary acute rheumatism. Griffith found that a hæmolytic streptococcus of a well-defined serological type was responsible for the cases and suggested (private communication) that there might be direct ætiological connexion between this streptococcal infection and rheumatic attacks. There were various causes which tended to divert suspicion from the hæmolytic streptococcus. Owing to what has been referred to as the silent period between the throat infection associated with rheumatic fever and the subsequent development of rheumatic cardiac symptoms, most cases of acute rheumatism reaching the hospital no longer show any demonstrable throat infection, nor does a bacteriological examination as a rule reveal a preponderating growth of the causal organism of the previous throat infection. (I have, however, been able to demonstrate the presence of the hæmolytic streptococcus in the throats of over half the rheumatic children who have been admitted to the Hospital for Sick Children, Great Ormond-street, during the past few months.) Moreover, the throat infection may be slight and give rise to few general symptoms, so that no history of tonsillitis or sore-throat is obtained from the parents. Swift,[6] writing in 1926, recognised this difficulty in studying the cause of the throat inflammations generally spoken of as associated with acute rheumatic infection.

The recognition of the full significance of the silent period and the provision of special homes for rheumatic children have recently facilitated investigations in this country. That these investigations have not hitherto implicated the hæmolytic streptococcus may be attributed to the fact that attention was generally focused on organisms found irregularly in the blood of patients with acute rheumatism, such as the various types of non-hæmolytic streptococci. In consequence work on throat cultures has been directed largely to search for similar organisms associated with the tonsillitis, &c.

Hitchcock,[7] in New York, and Nabarro and MacDonald[8] in London, studied throat cultures from rheumatic children, not at the time suffering from acute upper respiratory infections, and failed to find any one type of *viridans* or other non-hæmolytic streptococcus predominating in the throats of

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rheumatic cases. In a series of epidemics at the West Wickham Home, Schlesinger made throat cultures at the time of the initial sore-throats and reported as follows:—

"During the 1927 epidemic special search was made for the streptococcus which Birkhaug has reported to be so frequently present in the throats of rheumatic children . . . we were unable to isolate this organism. It was noticed that many of the streptococci were hæmolytic on blood-agar plates and the rest, cultured on boiled blood-agar, were chiefly of the *viridans* type commonly found in the throat."

In later epidemics similar results followed similar procedure, and Schlesinger came to the conclusion that no causal organism could be associated with these epidemics. He himself, however, regarded them as epidemic clinically, since "infection" appeared to spread from case to case. Though its possible significance was not recognised, the fact that hæmolytic streptococci were observed to predominate in the cultures where blood-agar was used suggests that this organism was responsible.

Present Investigation.

This investigation deals with the bacteriology of an outbreak of tonsillitis in Dr. Wilfrid Sheldon's ward for rheumatic cases at the Cheyne Hospital for Children. Its clinical aspect is described in Dr. Sheldon's communication.

The first case of tonsillitis was observed on Oct. 31st, 1930, and the bacteriological investigations were begun on Nov. 10th, when the second case appeared. Subsequent cases occurred at intervals during the months November to February inclusive, a detailed study of the throat flora being undertaken during this period. Throat swabs were obtained at definite intervals from every child, irrespective of its clinical condition at the time, and a more intensive investigation was made of the children who were affected by the serious outbreak of throat infection which was associated in almost every case with subsequent acute rheumatic relapse.

The results of this study are set out in the accompanying chart. Only the presence or absence of hæmolytic streptococci is indicated, except in the case of a group of colds which were of pneumococcal origin, for no other organism was found to account for the clinical symptoms of tonsillitis and pharyngitis. The throat infection is referred to for simplicity in the chart by the word "tonsillitis" when the infection was associated with inflamed tonsils or large tonsillar remnants, and by pharyngitis when previous tonsillectomy had been complete. When the heart has been involved in the rheumatic relapse this is termed "carditis" and where arthritis occurred without cardiac involvement this is stated briefly. A correlation between the throat infection and the subsequent secondary attacks of acute rheumatic fever is shown by the chart, and the epidemic nature of the infection is demonstrated by the succession of cases.

The organism causing the epidemic was the hæmolytic streptococcus, and it is shown that only after infection with this organism did relapses occur

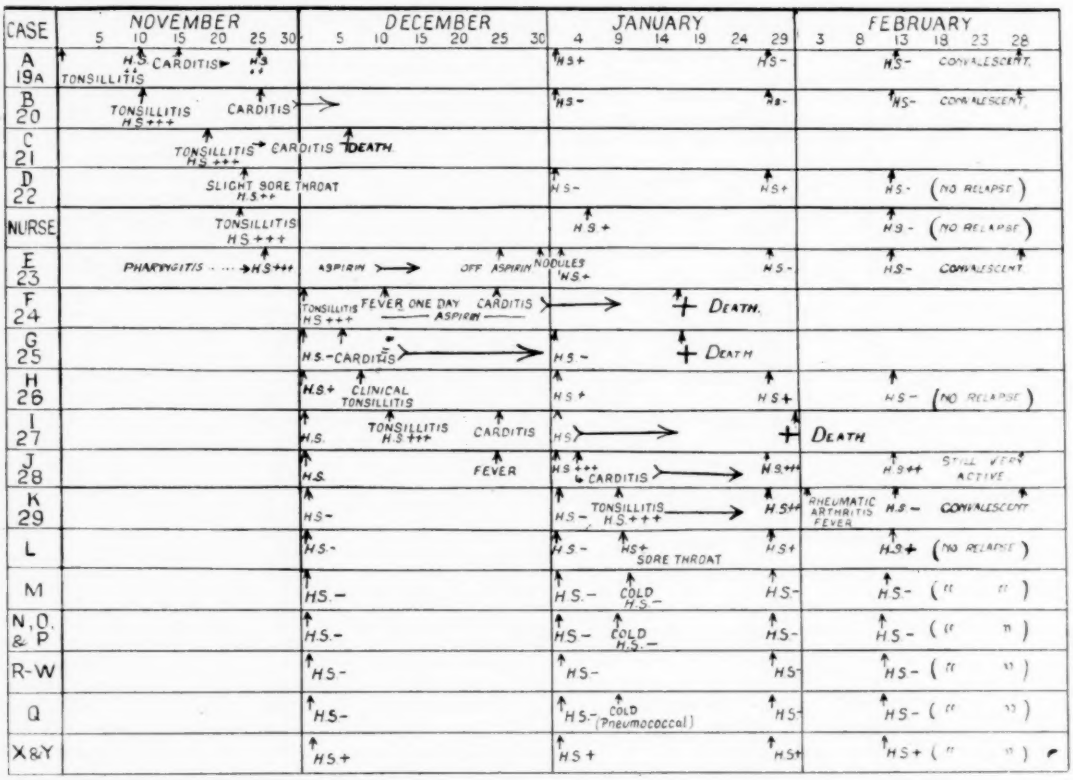

Chart showing incidence of rheumatic relapses and association of hæmolytic streptococcal infection during an outbreak of tonsillitis among rheumatic children in a ward at the Cheyne Hospital from November, 1930, to February, 1931. The 25 children in the ward are here called A to Y, but the 11 cases A to K are those numbered 19A to 29 in Table I. of Dr. Wilfrid Sheldon's paper, published herewith. H.S. = hæmolytic streptococci obtained from throat swab; + + + = pure culture; + + = fairly numerous colonies; + = sparse colonies; − = no colonies on plate.

during these four months. A small epidemic of upper respiratory infection termed on the chart "colds" and associated with the pneumococcus produced no after-effects.

A silent period of over ten days is shown in all but two cases. In one of the latter cases (C), who had already a very much damaged heart, a very severe throat infection accompanied by a temperature of 104° lasting for four days was followed after a period of only two days by an attack of fulminating carditis. In the other no prior sore-throat was observed, nor did a throat culture five days before the relapse reveal the presence of hæmolytic streptococci. The relapse occurred, however, in the course of the epidemic, and some site of infection other than the throat was possibly responsible. Seven cases in which an almost pure growth of the organism was obtained during the throat infection had a subsequent secondary acute rheumatic attack. One similar case treated by aspirin showed no symptoms till the drug was discontinued when 35 days after the initial throat inflammation nodules appeared and the pulse-rate increased. In two cases (D and L) with slight sore-throats which were associated with the appearance of only a few colonies of hæmolytic streptococci on the plate culture from the throat no relapse occurred. Three cases (H, X, and Y) showed a few colonies on the plates at each culture, and as their throats appeared normal at the time must be regarded as casual carriers. One of the latter (H) developed clinical tonsillitis on Dec. 8th, but no culture was taken on that date and no relapse occurred subsequently. A nurse who also suffered from acute tonsillitis during this period and from whose throat a hæmolytic streptococcus was obtained, made an uninterrupted recovery.

The remaining 11 children had no infection with hæmolytic streptococci during this period, though five suffered from the "colds" already referred to, and none experienced rheumatic relapses.

POST-MORTEM EXAMINATIONS.

On the four cases which came to autopsy the macroscopic and microscopic appearances confirmed the clinical diagnosis of acute rheumatic carditis. Pericarditis was found in every case; it was associated with perisplenitis in two cases and recent endocarditis in every case. Cultures taken from the centre of the tonsils gave an almost pure growth of hæmolytic streptococci in three cases (the fourth case had had tonsillectomy). Hæmolytic streptococci were cultured in one case from an enlarged gland behind the pericardium, in another from the spleen, but in none of the four fatal cases could growth be obtained from the heart's blood post mortem.

BLOOD CULTURES.

Fifteen blood cultures were made from 11 of these patients—six during the tonsillitis, three during the silent period, and six during the acute cardiac relapse. Twelve cultures remained sterile, one was contaminated, and two grew a small diplobacillus. In no case was a hæmolytic streptococcus cultured from the blood.

The method of blood culture employed was a modification of that recommended by Cecil, Nicholls and Stainsby—e.g., 25 c.cm. of blood are withdrawn from the arm and placed in two sterile tubes, the serum subsequently removed, and 50–100 c.cm. glucose phosphate broth added. Sub-cultures were made every week for six weeks. This method had previously proved efficient both in routine hospital blood cultures and in cases of infective endocarditis where the organism was difficult to grow.

INTRA-CUTANEOUS TESTS.

Below are submitted some preliminary observations which have been made on the skin reactions with the products of the hæmolytic streptococci responsible for the Cheyne epidemic of tonsillitis.

Two preparations have been used. One was the exotoxin which consisted of the filtrate of a 24-hour broth culture. This filtrate was found to contain a toxin capable of producing positive skin reactions in susceptible individuals in a dilution of 1/1000. These reactions took 12–24 hours to develop and when compared side by side with Dick reactions gave similar appearances and results in nearly every case.

The second preparation, which may be termed the soluble "endotoxin," was an extract from the bodies of the cocci obtained in the following way:

The cocci were centrifuged from 100 c.cm. broth culture, washed with salt solution and heated to 60° C. for half an hour. They were dried in a vacuum over phosphoric pentoxide and were ground in a microbe-mill for several days, at the end of which very few intact cocci could be found in smear preparations. The ground-up bodies were then extracted with salt solution in the proportion of 10 c.cm. to the deposit from 100 c.cm. of broth culture. This suspension in turn was centrifuged until quite clear and the supernatant fluid removed and carbolised (0·5 per cent.). From this concentrated solution dilutions of 1/100 and 1/500 were made for actual use in the skin tests.

All the children in Dr. Sheldon's ward at the Cheyne Hospital were skin-tested to the exotoxin and to the soluble extract. In the chart and in Table I. are recorded the results of the tests on all the cases, except those with fulminating carditis, together with control tests on 20 non-rheumatic children from the Hospital for Sick Children, Great Ormond-street, suffering from other diseases and belonging to the same age period.

TABLE I.—*Skin Reactions with Exotoxin in Cases at the Cheyne Hospital.*

—	Cases.	Positive.	Negative.
Rheumatic cases	22	2	20
Controls	20	7	13

All cases giving positive reactions reacted to 0·2 c.cm. 1/1000 dilution and those considered negative gave no reaction to 0·2 c.cm. 1/100 dilution. It was observed that one of the cases reported above as positive became negative six weeks after an attack of acute tonsillitis associated with the hæmolytic streptococcus.

TABLE II.—*Skin Reactions with Soluble "Endotoxin" in Cases at the Cheyne Hospital.*

—	Cases.	Strongly positive.	Moderately positive.	Negative.
Rheumatic cases.	22	16	6	0
Controls	20	3	2	15

I have found it more difficult to arrive at a suitable skin test dose for the soluble extract than for the exotoxin. The cases in Table II. were tested with 0·2 c.cm. 1/100 and 0·2 c.cm 1/500 and the results read at the end of 24 and 48 hours. Reactions were considered strongly positive if they fulfilled three conditions: (*a*) the erythema at the site of an injection of 0·2 c.cm. of 1/100 dilution measured more than 20 mm. at 24 hours (read in two directions and the mean taken); (*b*) if it did not fade or if it increased in 48 hours; and (*c*) if œdema was present around the site of inoculation. In such cases the 0·2 c.cm. of 1/500 dilution gave smaller but similar readings. Reactions were considered moderately positive if,

at the site of inoculation with the 1/100 solution there was an erythema of 12 mm. or more with slight œdema which persisted for 48 hours.

In many of the rheumatic cases the reactions were severe, an erythema appearing of more than 40 mm. This was accompanied by œdema and followed by the formation of a central necrotic area which resembled in appearance a strong Mantoux reaction. In one case the erythema round the site of inoculation with the weaker solution resembled that of erythema marginatum.

Some observations were also made on ten cases skin-tested during acute fulminating carditis. In these very sick children a greatly reduced sensitiveness to the "endotoxin" was observed during the most acute phase of the relapse. Some of these cases, observed throughout their illness, were shown to be positive both before and after the acute relapse. This phenomenon is probably merely a temporary inability of the body cells to react; a similar loss of skin sensitiveness is often observed in fulminating tuberculosis and typhoid fever and has been described by Mackenzie and Hanger [9] and others.

These skin tests show that there is a marked difference between the toxic action of the exotoxin and that of the endotoxin; while the exotoxin gave fewer reactions in the rheumatic cases than in the normals, the soluble endotoxin reacted in 100 per cent. of rheumatics and in only a quarter of the controls. It must be remembered that this group of rheumatic children were all cases who had suffered from previous attacks of acute rheumatism associated with carditis and had probably had previous streptococcal infection.

A number of experiments were performed to ascertain as far as possible some of the properties of these two streptococcal products. Some cases which had previously been proved to give positive reactions to the exotoxin or to the soluble endotoxin were retested with solutions of these substances which had been placed in a boiling water bath for one hour. The exotoxin was found to be inactivated by the heat while the reaction to the endotoxin was unaltered.

Neutralisation experiments with the serum from persons giving negative skin reactions showed that the exotoxin was completely neutralisable while the endotoxin tended to give conflicting results with similar experiments. It seemed, however, clear that the degree of skin sensitivity to the latter did not depend on a simple toxin-antitoxin balance, but on a sensitivity of the cells themselves. The above results show that the exotoxin is neutralisable and heat-labile and probably identical with the Dick toxin, while the endotoxin is heat-stable and probably unneutralisable by serum.

Some further preliminary experiments were done with a view to finding the chemical compositions of the active principle in the soluble endotoxin:—

(*a*) 5 c.cm. of the original saline extract were dialysed for over 100 hours till the dialysate no longer contained any trace of salt when tested with a few drops of silver nitrate. At the end of the experiment the amount of the fluid in the sac was found doubled and a precipitate had formed at the bottom. The precipitate was redissolved, and both it and the supernatant fluid from the dialysis were made up to dilutions calculated as 1/100 of the original extract. Both gave strongly positive skin reactions on known sensitive cases, though the supernatant fluid appeared to be the more potent.

(*b*) 5 c.cm. of extract were precipitated with decinormal acetic acid at a pH 4. (Both supernatant fluid and redissolved precipitate gave positive reactions and again the former was the more potent.)

(*c*) 5 c.cm. of extract were saturated with ammonium sulphate; tests showed that both deposit and supernatant fluid contained the active principle.

These experiments demonstrate that the active principle of the endotoxin is not dialysable. The fact that it was present in both supernatant fluids and precipitates suggests that it is a very soluble substance which probably adheres to the precipitates and is carried down with them.

Swift, Wilson, and Todd [10] have demonstrated marked hypersensitiveness of rheumatic fever patients to "nucleo-proteins" prepared from all types of streptococci but most marked to those from hæmolytic types. Coburn,[4] to whom further reference is made below, has also shown supersensitiveness in 99 per cent. rheumatic fever patients, to "nucleo-proteins" obtained from the hæmolytic streptococcus but not to those from a *viridans* strain. There are many references in the literature of the last five years to skin tests on rheumatic cases to filtrates and autolysates prepared from any different types of non-hæmolytic streptococci, by Birkhaug [11] and others.

However, the number of cases reported in this paper is not sufficiently numerous to warrant a comparative discussion of these works at present. A further study with purified extracts from other strains of hæmolytic streptococci and from non-hæmolytic streptococci is at present being undertaken and will be reported in another communication.

Discussion.

In Coburn's [4] work referred to above there is presented a most formidable array of facts in support of his view that the hæmolytic streptococcus and no other organism, culturable by ordinary means, causes the upper respiratory infections associated with acute rheumatism. He brings forward evidence to show that—

hæmolytic streptococci are but rarely found in the tropics where acute rheumatism is almost unknown. In a group of children whom he transported to Porto Rico from New York all symptoms of active rheumatism disappeared in a short time along with the coincident disappearance of the hæmolytic streptococcus from their throats. On subsequent return to New York hæmolytic streptococci appeared once more and their appearance was followed by rheumatic relapses.

The throat flora of a group of ambulatory rheumatic children were kept under observation for over a year and the effect of upper respiratory infections watched. Although epidemics of nasopharyngeal infection occurred with the pneumococcus, Pfeiffer's bacillus, the hæmolytic staphylococcus, and the hæmolytic streptococcus, it was only after infection with the latter that rheumatic relapses tended to recur. He also observed a very high degree of sensitiveness in rheumatic cases to "nucleo-protein" prepared from the hæmolytic streptococcus.

The facts presented in this paper were obtained by the study of an epidemic of rheumatic fever following the recognition of the silent period and offer a different approach to the subject than that pursued by the last author, yet the results are in remarkable agreement with his findings. They deal only with rheumatic relapses in association with acute hæmolytic streptococcal infection of the throat. However, these relapses, studied from the clinical point of view, show all the symptoms of second acute attacks of rheumatic fever rather than the mere lighting up of a subacute focus; they would be better described as acute secondary attacks of rheumatic fever, since in every instance where relapse occurred the disease was inactive at the time of the acute nasopharyngeal infection.

So far as present knowledge goes there does not appear to be any essential distinction between primary and secondary attacks of acute rheumatic fever. Scarlatina may, for example, give rise to an attack of acute rheumatic fever in cases with no previous history of rheumatism and it commonly causes a relapse in children with a rheumatic history. In both cases the phenomenon of the silent period is similar—i.e., a period of 10–20 days elapses between

the onset of infection and the appearance of the rheumatic symptoms.

In spite of the difficulty of getting a clear history of sore-throat and obtaining satisfactory throat cultures in many cases arriving at hospital with primary attacks of rheumatic fever such cases as the following are not infrequently met with in the wards of the Hospital for Sick Children, Great Ormond-street:—

Boy, aged 7 years, admitted to Dr. Hutchison's ward complaining of pain in the chest and shortness of breath.

Past history: Frequent attacks of acute tonsillitis.

History of present illness: Four weeks ago had acute tonsillitis associated with fever; 14 days later pains commenced in muscles and joints, later increasing in intensity and being associated with general malaise. Shortness of breath developed gradually from this date.

Physical examination on admission: This revealed acute pericarditis, the tonsils were large and red and showed signs of recent acute inflammation. On admission throat culture gave a still predominant growth of hæmolytic streptococci. Five weeks later the throat infection appeared to have cleared up and hæmolytic streptococci could no longer be demonstrated by throat culture. The tonsils were enucleated five and a half weeks after admission. They were large but not unhealthy and contained no pus; cultures made by direct smear on blood-agar plates from the centre of the tonsil grew only two colonies of hæmolytic streptococci. Skin tests with hæmolytic streptococcal "endotoxin" gave strongly positive reactions.

I wish to thank Dr. Hutchison for allowing me to publish this case.

This case demonstrates how the infection soon disappears from the throat in rheumatic fever and is an example of acute hæmolytic streptococcal tonsillitis followed, after a silent period of 14 days, by the appearance of symptoms of acute *primary* rheumatic fever; it affords additional evidence in support of the view that the essential mechanism is the same in primary and secondary attacks.

The case quoted above also brings out another point of considerable importance. The clinical notes give a history of repeated attacks of acute tonsillitis. This is a very constant finding in the histories of cases of acute rheumatism. Often a history of previous scarlet fever is also obtained. This fact suggests the possibility of an altered body reaction being produced in persons who have had previous streptococcal infections. Clinically an early rheumatic state has been described. While no very clear picture of this state can be given, every children's physician constantly sees children complaining of vague limb and joint pains or slight choreic movements.

It is in this connexion that the discovery of a soluble extract from the body of the hæmolytic streptococcus to which rheumatic cases are particularly sensitive is of interest. The skin sensitiveness is such that the inoculation of 0·2 c.cm. of a dilution of 1/500 of the extract will cause an erythema of 35 mm. an inner area of œdema of 20 mm. and a central area of necrosis of 7 mm. in a hypersensitive rheumatic case, while 0·2 c.cm. of 1/100 extract injected into a non-rheumatic insensitive case will produce no reaction at all. This is indeed a very profound change in tissue reaction.

But it must be clear to anyone who has studied the clinical phenomena of the acute rheumatic state characterised by such different manifestations as arthritis, rheumatic nodules, carditis, chorea, and skin eruptions, that the dissemination of a soluble poison from a single focus of infection can hardly be the sole factor in the production of all these conditions.

The fact that 15 blood cultures during life and four cultures from the heart's blood at autopsy, reported on in this paper, did not reveal the presence of the hæmolytic streptococcus in any case would suggest that this organism had not at any time produced a septicæmia. The discovery, however, of the hæmolytic streptococci in foci so far distant as the spleen and the pericardial glands does indicate at least a transient bacteræmia with the organism causing the upper respiratory infection.

The observations recorded in this paper show: (1) that an acute infection of the throat with hæmolytic streptococci may cause secondary attacks of acute rheumatic fever in children who have already suffered from one or more attacks of acute rheumatism; and (2) that such children are highly sensitive to intracutaneous injection of a soluble extract of the bodies of the hæmolytic streptococci. The precise bearing of these findings on the pathogenesis of rheumatic fever requires further investigation, and there are many questions upon which information must be sought before the part played by the hæmolytic streptococcus can be defined.

Summary.

1. An epidemic of tonsillitis in a ward occupied by cases of rheumatic heart disease at the Cheyne Hospital for Children was shown to be caused by the hæmolytic streptococcus. 2. Rheumatic relapses occurred in 9 out of 11 children who developed acute streptococcal infection, while similar febrile disorders not associated with the hæmolytic streptococcus caused no relapse. 3. In addition to the throat cultures 15 blood cultures taken in 11 cases during life and four cultures from the heart's blood after death failed to reveal the presence of the hæmolytic streptococcus in any case, though the organism was cultured at autopsy from the centre of the tonsils in three cases, the spleen in one, and the glands draining the pericardium in another. 4. Intracutaneous tests were made with the exotoxin and a soluble "endotoxin" from the hæmolytic streptococcus causing the outbreak. 5. Rheumatic subjects were found to be very sensitive to the endotoxin while they gave fewer positive reactions to the exotoxin than a similar age-group of controls. 6. The association of throat infection with hæmolytic streptococci and rheumatic fever is discussed and a possible causal relationship suggested.

This paper was written in conjunction with Dr. W. Sheldon, without whose help and the splendid coöperation of the sister of the ward at the Cheyne Hospital the work could never have been done. I wish particularly to thank Dr. F. Griffith for his help and advice throughout the whole of the work. Many of the extracts were prepared in the pathological laboratory of the Ministry of Health. I should like to thank Dr. J. A. Glover for his advice and Dr. W. W. Payne and Mr. P. Bruce White for their help in connexion with the chemical analysis of the extracts. The work was done in the Research Department of the Hospital for Sick Children, Great Ormond-street, under the direction of Dr. D. Nabarro, to whom and to the medical staff of the hospital my sincerest thanks are due.

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PERMANENT SEPARATION OF THE EPIPHYSIS FOR THE CAPITELLUM.*

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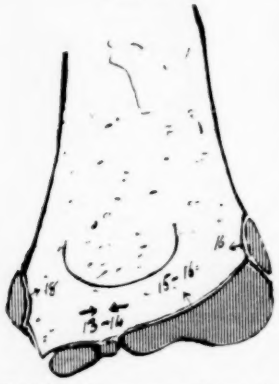
The manner of ossification of the lower end of the humerus is variously described in papers and text-books. This is because the centres appear at varying ages, not always at one particular date. I have taken the earliest age at which any centre has been noticed as present and adopted it as the basis of the following description. I do not assert that this is the age at which the centre appears, but it is the age before which it is not found. All writers agree as to the order of appearance of the centres: capitellum, internal epicondyle, trochlea, and, if present, external epicondyle. The last-named is surgically of no importance. Most writers agree also as to the order in which these centres fuse with each other and with the shaft, but disagree by as much as three years on the age at which these fusions take place.

The earliest age at which these centres have been found is: capitellum, 1 year; internal epicondyle, 3 years 9 months; trochlea, 8 years; external epicondyle, 9 years. The last three may not appear until two or three years later than the age indicated, but the centre for the capitellum is almost always present at 1½ years. The centres for the capitellum and trochlea (that for the latter consisting of two nuclei placed side by side) (Fig. 1) unite in the thirteenth or fourteenth year and join the shaft in the fifteenth or sixteenth year; the two remaining centres join up a little later, the outer fusing equally with the capitellum and the shaft, the inner joining the shaft separately at a higher level, last of all. At 19 years it is unusual to find any epiphyseal lines showing.

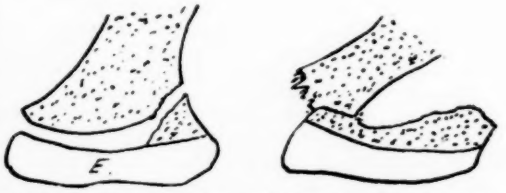
Fig. 1.



Showing the manner and year of fusion for the centres for the lower end of the humerus. The curved line indicates the position of the olecranon fossa, through which transverse fractures take place.

At birth the lower end of the humerus consists entirely of a cap of cartilage, and it is possible, though extremely rare, for this to be torn completely away from the shaft. There is a specimen very nearly showing this in the Museum of the Royal College of Surgeons (Fig. 2) and Mouchet[1] has described a case. On the other hand, the inner end of this cap, containing the centre for the internal epicondyle, is frequently torn off. In out-patient work this is the condition known as "injury to the lower epiphysis," and usually nothing is done for it. It should be replaced by open operation. When the child is a few years old, it is not at all unlikely to sustain a transverse fracture through the olecranon fossa, often with gross displacement of the fragments (Fig. 3). Though this is a break in the bone and the line of cleavage is some distance away from any epiphyseal line (see also Fig. 1), it has in the past been described as a separation of the lower epiphysis. The true separation which does occur is a tearing away from the cap of cartilage of practically its outer half, containing the centre of ossification for the capitellum. This centre is D-shaped and can be seen displaced in the lateral radiogram; normally the plane of its axis as mentioned by Cohn[2] should intersect that of the shaft at an angle of 60° (Fig. 4). The part displaced is much larger than the part seen in the radiogram, for the D-shaped part is only the bony nucleus or kernel. It is also much more than the part destined to be the capitellum, for it extends inwards to include half the trochlea (Fig. 1). In the two following cases this accident occurred in early life, and the torn off part has remained as a separate bone.

Figs. 2 3



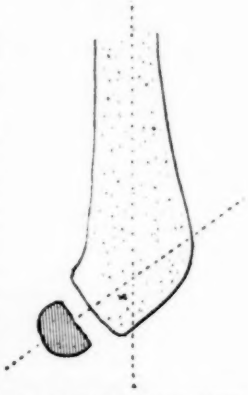
Child, aged 2. Separation of epiphyseal cartilage (E) of humerus.

Child, aged 2. Transverse fracture through olecranon fossa, formerly described as a separation of epiphyseal cartilage.

Both these drawings are from specimens in the Museum of the Royal College of Surgeons, numbered respectively 3579.1 and 3396.1.

Case 1.—A jar washer, aged 22, was sent to me on May 3rd, 1928, by Dr. R. H. Evans, complaining of pain in the left shoulder, which she had had on and off for years. On examination she was found to have a marked deformity of the left elbow; there was cubitus valgus, the "carrying angle" being 135° instead of the normal 165°. She said she had broken the left elbow when 4 years old, and that it had been crooked ever since. The radiogram showed that the outer half of the lower end of the humerus was lying separate from the rest of the bone (Fig. 5). Though separate, it has retained fairly well its correct shape and the radius articulates normally with it. There is a considerable gap, however, between it and what is left of the trochlea. The radius and ulna form a very oblique angle with the humerus.

Fig. 4.



The D-shaped bony centre or epiphysis for the capitellum, as seen in a lateral radiogram. The plane of its axis should intersect that of the shaft at an angle of 60°.

The function of the elbow is perfect, except that its shape renders some movements very awkward. I suggest that the pain in the shoulder may be due to commencing osteo-arthritis, caused by abnormal strain because of the awkward elbow. As pointed out by Lane and others, when one joint of a limb is thrown out of line, the other joints eventually become affected.

Case 2.—A hand driller in the Royal Arsenal, aged 18, was sent to me on August 9th, 1928, by Dr. C. Kingsley Carroll, complaining of pain in his left elbow when carrying heavy weights. On examination I found a similar deformity of the left elbow, with a similar "carrying angle"; and there was a history that when 6 years old he had dislocated

* Based on a paper read before a meeting of the British Orthopædic Association held in London on Nov. 29th, 1930.

[1] Mouchet, Albert: Presse Méd., Nov. 10th, 1928.

[2] Cohn, I.: Arch. of Surg., 1921, ii., 455.

it and had the dislocation reduced. The radiogram (Fig. 6) showed a distorted elbow, with complete separation of the capitellum from the humerus. There is a large gap between it and the latter bone and between it and the radius; again part of the trochlea is missing, and again the radius and ulna form a very oblique angle with the humerus. The capitellum has been twisted through 90°, its radial surface pointing directly outwards instead of downwards. The radial head has tried to reach the capitellum, as shown by its very marked hypertrophy. Though there is full movement of the elbow, the articulation of the head of the radius is peculiar: for the capitellum is movable, and when the radius rotates the former rotates with it, so that part at least of the movement takes place between the capitellum and the humerus. There must be a fibrous band joining the capitellum to the radius.

FIGS. 5 6

Permanent separation of the epiphysis for the capitellum, without displacement. Permanent separation of the epiphysis for the capitellum, with rotation through 90°.

These cases are presented as examples of true separation of the centre for the capitellum, and differ from the Royal College of Surgeons' case and from Mouchet's case, in both of which the whole cartilaginous cap was involved. They demonstrate the result of non-operative treatment. In the second patient, the rotation through 90° and the wide displacement account for the non-union, but in the first, where the separated portion appears to be accurately opposed and in proper line, one must suppose that the gap is due to the intervention of tags of torn muscle or capsule.

The correct treatment of this injury, if met with directly after the accident, is open operation and replacement of the separated fragment by suture. I propose to do a transverse osteotomy of the humerus in the first case, and to replace the fragment in the second. In the first I attribute the pain to secondary osteo-arthritis of the shoulder-joint; when the humerus is put straight the pain will go. If I am wrong, the patient will be no worse off, and will have a straight arm. In the second, the pain is due to the insecure arrangement of the radio-humeral articulation, and this must be put right. If the patient wishes, an osteotomy can be done later.

After reading my paper, I had a letter from Mr. G. H. Stevenson, of Glasgow, enclosing notes of a case similar to Case 1. The radiogram, except that it is of the right arm instead of the left, is identical with that of my patient. His case concerned a woman aged 40, complaining of severe pain in right arm, with wasting of all the ulnar intrinsics. There was marked "cubitus valgus," and she gave a history of a fall on the right elbow when a child. He operated and transposed the ulnar nerve to the front of the elbow, with excellent result. This case suggests the possibility of both of my cases developing nerve symptoms in later years.

THE ZONDEK-ASCHHEIM REACTION.

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WITH the introduction of the Zondek-Aschheim reaction all other biochemical tests for the diagnosis of early pregnancy were superseded. As workers over a wide area were obtaining excellent results it certainly seemed worthy of investigation; some of the results of 12 months' study here are given below. The method employed was a slight modification of that introduced by H. Allan and F. Dickens.[1] The mice received the injection over a period of three days, morning and evening of each day; it is not essential to keep to the exact time each day. They were killed on the morning of the fifth day.

Results.

Group A.—Physiological Pregnancies.

Normal uncomplicated pregnancies	18
Hyperemesis	4
Pregnancy and heart disease	1
Pregnancy, pyelitis, and albuminuria	6
Pregnancy and epilepsy	2
Pregnancy and syphilis	2
Pregnancy and gonorrhœa	1
Pregnancy and pulmonary tuberculosis	2
Pregnancy and excessive obesity	2
Pregnancy and uterine fibroids	2

All gave a positive reaction.

Group B.—Abnormalities of Pregnancy.

	Cases.	Pos.	Neg.
Hydatidiform mole	9	8	1
Carneous mole	2	2	0
Dead fœtus	1	1	0
Ectopic pregnancy	3	2	1

Group C.

	Cases.	Pos.	Neg.
Amenorrhœa	9	0	9
Menstruation	1	0	1
Menopause	2	0	2
Rape	1	0	1
Abortion	3	0	3
Abnormalities of thyroid	4	1	3

Group D.

	Cases.	Pos.	Neg.
Tabes dorsalis	1	0	1
Amenorrhœa and gonorrhœa	1	0	1
Fibroids and fibrosis uteri	4	0	4
Uterine polyp	1	0	1
Menorrhagia	2	0	2
Salpingitis	1	0	1
Carcinoma of cervix	3	0	3
Carcinoma of body of uterus	1	0	1
Ovarian tumours	9	0	9
Pituitary tumours	1	0	1
Unclassified	3	0	3

Duration of Pregnancy in the Cases Cited.

(Days numbered from last menstrual period.)

25 to 60 days' amenorrhœa	14 cases.
60 to 100 ,, ,,	10 ,,
100 to 200 ,, ,,	4 ,,
200 days to full time	11 ,,

The only fallacy was a case of hyperthyroidism in a female aged 19, both lobes of the thyroid being

[1] THE LANCET, 1930, i., 39.

enlarged, the basal metabolic rate being plus 43, and menstruation regular. The specimen of urine was obtained two days before menstruation was due and gave a positive reaction. This was followed two days later by normal menstruation. In such cases hypertrophy of the anterior pituitary gland has been noticed. In the case of hydatidiform mole which gave a negative reaction, the specimen of urine was obtained five days after parturition; this might explain the negative reaction.

A case of dead fœtus.—There had been amenorrhœa of 233 days, before which menstruation had been regular. The reaction was done because, on physical examination, the clinical findings did not agree with the patient's history, but suggested a pregnancy of three months. The patient herself thought there was something wrong; it was a second pregnancy. Twenty-seven days after a positive result had been sent a macerated fœtus was evacuated. The estimated age of the fœtus was 2–3 months.

Cases of ruptured ectopic gestation.—Case 83 was a patient admitted as a case of acute appendicitis; no menstrual period had been missed, and previously menstruation had been regular. The condition proved to be a tubal abortion. The reaction obtained was negative.

In Case 116, 32 days had elapsed since the last menstrual period. The time of rupture as judged by the onset of pain and abdominal symptoms preceded the specimen of urine obtained by 31 hours. This case gave a positive reaction.

Case 123 had had 58 days' amenorrhœa; at operation a large quantity of clotted blood was found in the pelvis with the remains of the fœtal tissues. The urine gave a positive reaction.

SUMMARY OF RESULTS.

	Cases.	Pos.	Neg.
Group A	39	39	0
„ B	15	13	2
„ C	23	1	22
„ D	24	0	24

TRANSITION FROM NEGATIVE TO POSITIVE.

Three cases illustrated the transition from the negative to the positive reaction during pregnancy.

CASE 1, a school-teacher by profession, had obtained a post at some distance from her home. She was extremely anxious to have a child, but there had been two miscarriages in the past. She was athletic, and the abortions had been attributed to this. She visited her doctor to see if he thought she might be pregnant; if so, she was willing to give up her intended post in the hope that her pregnancy might terminate successfully. Her menstruation was of the 28-day type, and was not due until five days after the visit to her medical adviser. There had been no interruption of menstruation. The urine was obtained on the Tuesday, Wednesday, and Thursday, menstruation being due on the following Friday. This specimen of urine gave a positive œstrin reaction only. The menstrual period was missed. Another specimen of urine was obtained on the Tuesday, Wednesday, and Thursday of the following week. This specimen gave a positive reaction. She gave up her intended post and I assisted at the circumcision of the offspring in the early part of this year.

CASE 2, an unmarried girl, had had her last menstrual period on August 14th, 1930. Coitus, which only occurred once, took place on Sept. 1st. The menstrual period due in the middle of September was missed. The urine was examined on Sept. 22nd and gave a positive œstrin reaction only. A second specimen was obtained from that passed on the morning of Oct. 1st, and this specimen gave a positive reaction.

CASE 3, a patient admitted as a case of acute appendicitis had not missed a period, and previously menstruation had been regular. A specimen of urine was obtained before the patient was sent into the theatre. Laparotomy showed a tubal abortion. The reaction was negative.

These cases show a definite negative reaction at the commencement of pregnancy. The transition occurred in the first case between the twenty-first and twenty-eighth day of pregnancy, and in the second case between the twenty-second and thirtieth day of pregnancy.

THE REACTION IN THE PUERPERIUM.

How long does the reaction remain in the puerperium? One case gave the following result:—

10 hours after labour	result positive.
20 hours after labour	„ „
34 hours after	œstrin reaction only.
44 hours	reaction negative.
60 hours	„ „

OTHER CASES.

Normal pregnancy	54 hours after labour	reaction negative.
	77 „ „	„ „
Carneous mole	3 days after	„ „
Hydatidiform mole	36 hours after	„ positive.
	3 days after	„ negative.
Hydatidiform mole and pulmonary tuberculosis	18 days after	reaction negative.

DEATH OF THE MICE DURING THE TEST.

This has been a considerable factor in the work of others; some have had to abandon the test altogether. This has not been my experience. It has been overcome by the following methods: (1) using the blood-serum; (2) centrifugalising the urine; (3) treating the urine with ether.

Where the urinary tract is infected, this difficulty may be overcome by using the blood-serum. It can be used in doses of 0·1 c.cm. at each injection. The urine may be centrifuged and the supernatant fluid only used. Treatment of the urine with ether has been found most satisfactory. In no specimen of urine received has the result been vitiated by reason of the toxicity of the urine. The method used is as follows. The urine is shaken up with a small quantity of ether and allowed to stand. As the ether is of lower specific gravity than the urine it rises to the surface, and is allowed to evaporate. Evaporation may be hastened by incubation at 37° C. in an evaporating dish. Nothing is extracted from the urine, and a sterile urine is left behind. I have successfully used this method where the urine had been kept over an interval of 23 and 47 days. Further observations have shown that where acetone is not present in the urine the separation may be hastened by using a separating funnel. If acetone be present and the separating funnel be used, some at least of the active principle is extracted. It is apparently immaterial whether the acetone is already present, as in hyperemesis, or is added.

Various other methods have been tried, among them the Zeitz filter, which removed not only the organisms but also the active principle. The ether treatment is useful for specimens sent by post.

Discussion.

This was an entirely impartial investigation into the Zondek-Aschheim reaction, and the results obtained show it to be a definite and reliable one. The urine from cases in which the products of conception are present contains an active principle which acts as a specific stimulus to the ovary of the immature mouse. There is apparently a definite negative reaction at the commencement of pregnancy and the chorionic villi are developing about the time that the reaction becomes positive. It is probably from these that the stimulus comes for the over-production of the anterior pituitary hormone. Chorionic tissue is the only tissue that is common to all the above conditions. Death of the fœtus has apparently no

effect on the reaction. So long as there is living chorionic tissue present a positive reaction is to be expected. It is immaterial whether this chorionic tissue is physiological or pathological. Macroscopic examination of the ovaries is sufficient; in no case has this finding been reversed by section of the ovaries.

SUMMARY.

1. This reaction is a reliable test for pregnancy. 2. The only fallacy in this investigation was in a case of Graves's disease. 3. The mortality in the mice can be overcome by treatment of the urine with ether. 4. Ether in the absence of acetone does not extract the active principle, but if acetone be present the active principle is extracted. 5. The reaction becomes positive at about the twenty-fifth day after conception. 6. The reaction disappears from the urine about 30 hours after parturition.

This work has been carried out in the pathological laboratory of the Royal Hospital, Wolverhampton. I am much indebted to Dr. S. C. Dyke, director of the department, for originally suggesting this subject, and for the admirable facilities which he has afforded me; also to the governors of the Royal Hospital. I am also much indebted to the coöperation of my medical colleagues, Mr. S. W. Maslen Jones and Dr. N. Wilkes, of the Women's Hospital, Wolverhampton; to Dr. G. Mitchell, director of the venereal diseases department, the Royal Hospital, Wolverhampton; to Dr. S. J. Cameron, consulting physician; and to Dr. D. M. Hart and Dr. M. Gilchrist, of the resident staff of Royal Maternity and Women's Hospital, Glasgow; to Prof. Beckwith Whitehouse and Dr. A. P. Thomson, of Birmingham; and to Mr. R. Stanley Lee, medical superintendent of the Municipal Hospital, New Cross, Wolverhampton.

CLINICAL AND LABORATORY NOTES

GONOCOCCAL POLYARTHRITIS IN A NEW-BORN CHILD.

By A. D. C. Bell, B.M. Oxf.,
MEDICAL REGISTRAR AND TUTOR, CHILDREN'S DEPARTMENT, ST. THOMAS'S HOSPITAL;

AND

P. A. Clements, M.B. Durh.,
SENIOR MEDICAL OFFICER, VENEREAL DISEASES DEPARTMENT, ST. THOMAS'S HOSPITAL.

The case here reported is that of a female infant born at term after a normal labour and weighing at birth 8 lb. 8 oz. The mother, aged 38, had had five other children all of whom were said to be alive and well. As a result of the infant's developing an acute ophthalmia in the right eye the mother was examined and found to have gonorrhœa, gonococci being found in cervical and urethral smears. The blood, examined by Dr. T. E. Osmond, gave a positive reaction to the gonococcal complement-fixation test, but a negative to the Wassermann.

The infant, born on Oct. 4th, 1930, was reported to have been quite normal until the fourth day when, as noted above, a purulent ophthalmia was discovered, and on the eighth day it was noted that she had swelling of the middle joints of the left forefinger and the right third finger, which was followed on the next day by a similar condition of the metatarso-phalangeal joint of the right great toe and of the ankle.

She came under our care when 16 days old. The general nutrition was fair and she was apparently free from pain except on movement of the affected joints. The temperature was 101° F. The joints above mentioned were swollen and the skin over them hot, red, and shining. No active inflammation of the conjunctiva was present and there was no discharge. On aspiration of the affected joint of the left forefinger, flaky pus was withdrawn containing numerous gonococci, which were demonstrated both in smears of the fluid and in culture on hydrocele agar. Prolonged search on numerous occasions failed to reveal any active focus until the eighth day after admission, when a scanty purulent discharge was noted in the right eye, and in this were numerous extracellular gonococci. A slight vaginal discharge was noted two days after admission, but no gonococci were found in it, and it disappeared in a few days under irrigation with a weak solution of chloramine-T.

The mild conjunctivitis was treated with boric acid irrigation every four hours, and daily painting of the everted lids with 2 per cent. solution of $AgNO_3$, followed by ung. hydrarg. oxid. flav. applied to the lids. After ten days' treatment gonococci still persisted in the slight conjunctival discharge, and instillations with 5 per cent. protargol were substituted for the silver nitrate, but gonococci continued to be found for another four days. The joints were treated by protection from the weight of the bedclothes, no splints being applied, and gradually improved until, on the twenty-seventh day after admission, only a little peri-articular thickening of the ankle and the middle-joint of the third finger of the left hand remained; five days later radiography showed no articular changes. The complement-fixation reaction carried out by Dr. J. Oliver was negative on admission and a month later. The patient was discharged practically recovered five weeks after admission, and when seen 11 weeks later was in good condition, gaining weight normally, and showing no sign of disease.

Gonococcal arthritis in infants appears to be a rare condition, for we have discovered reports on only 43 cases, and in many of these the causative organism was not identified. The arthritis in this case was apparently secondary to a gonococcal conjunctivitis which subsided as the arthritis developed, and relapsed as this improved. The reappearance of gonococci in the conjunctival sac and their persistence after relapse, though this was accompanied by only slight signs of irritation, is of interest, as is also the fact that the gonococcal complement-fixation reaction remained negative in the presence of a well-marked gonococcal arthritis, such as in an adult would almost certainly have given rise to a positive reaction. That the mother's infection was discovered only by the fact of the child developing ophthalmia shows the importance of careful ante-partum examination.

For permission to publish this case we are indebted to Colonel L. W. Harrison.

A CASE OF PAROTID CALCULUS.

By D. M. Sutherland, M.D. Manch., F.R.C.S. Eng.,
HON. ASSISTANT SURGEON TO THE ROYAL MANCHESTER CHILDREN'S HOSPITAL; HON. SURGEON TO STOCKPORT INFIRMARY.

In April of this year a woman, aged 48, presented herself with a diffuse swelling of the left parotid gland. She stated that about 10 years previously she began to experience a feeling of fullness in the gland with swelling which appeared at meal-times and subsided about half an hour after a meal. The swelling did not appear each day and after five months the trouble disappeared. Eight years later the condition recurred and she noticed that pus was exuding from the inner side of the cheek. The swelling of the gland persisted and she began to suffer severe dyspeptic symptoms. She developed symptoms of hyperthyroidism, the toxic symptoms of which she still displayed at the time of operation. On examination the entire parotid gland was enlarged and the anterior portion showed a softened area with a hard centre suggestive of the presence of calculus. Radiography however gave a negative result.

The history of the case seemed to point so definitely to the presence of calculus that it was decided to explore the

gland. The hardest and most prominent portion of the gland was explored by a needle and a calculus was felt. A horizontal incision was made into the gland directly over the prominence, a small abscess cavity opened, and a calculus about ¼ in. in length and ⅛ in. in thickness removed. Within 48 hours of the removal of the calculus the discharge of pus into the mouth had ceased. Although the wound was slightly inflamed for several days a fistula did not ensue. The general enlargement of the gland has subsided gradually but the immediate relief of the dyspepsia was remarkable. There was no sign of injury to the facial nerve.

The stone proved to be only slightly opaque to X rays. It did not show the presence of any foreign body.

There has been much discussion concerning the ætiology of calculus formation in the salivary glands. It has been suggested that the cause may be the entrance of a foreign body into the duct of a gland or that it may be infection of the gland with bacterial decomposition of the secretion and precipitation of its colloid and inorganic constituents. In the case reported neither of these two factors appeared to be the cause. The calculus was in the gland and not in the duct as would have been expected if a foreign body had been the cause. The parotid duct runs forwards from the gland upon the masseter muscle to its anterior edge where it turns sharply inwards through the cheek piercing the buccinator muscle, and then runs forwards between this muscle and the mucous membrane; it opens into the mouth by a minute orifice. From anatomical considerations it would appear difficult for calculus in the gland to be due to a foreign body. The fact that the parotitis and abscess formation disappeared after the removal of the calculus suggested that the infection was secondary and not the cause of the calculus.

It must be remembered also that bacterial infection of the parotid gland is much more common than that of any other salivary gland and yet calculus formation is rare. The above case suggests that the calculus was due to the precipitation of the constituents of the parotid secretion caused by some unknown alterations in the reaction of the gland. Two other points brought out by the case are the value of probing the gland by means of a fine needle, which does no harm, and the fact that a negative radiographic examination does not disprove the existence of a stone.

REVIEWS AND NOTICES OF BOOKS

Florence Nightingale, 1820-1856.

By I. B. O'MALLEY. London: Thornton Butterworth, Ltd. 1931. With 24 illustrations. Pp. 416. 21*s*.

Florence Nightingale, a national heroine, is already the subject of a complete biography by Sir Edward Cook, while estimates of her character and summaries of her life-work have won places in much general literature. But Mrs. O'Malley's book is none the less wanted, for it enables us to appreciate the intimate motives of Florence Nightingale's conduct, her hesitations and doubts and their origins, the interplay upon her feelings and her actions of her home environment and the influences of her few but intimate affections. The author's attempt has been to give a representation of things that might have been—indeed certainly would have been—in an autobiography, and then to depict Florence Nightingale's early years to the reader, as they might have appeared to Florence herself. In a generous preface, Mrs. O'Malley urges that all should read Sir Edward Cook's book, or, at any rate, the abridged version of this book which appeared in revised form in 1925, written by Mrs. Vaughan Nash, but she makes no attempt to compete with either work.

The record leaves off at the end of the Crimean war, when Florence Nightingale was 36 years old. It is divided into two equal parts, the first dealing with the early life and the second with the Crimean war, and in each case, wherever possible, Florence Nightingale is made to speak for herself and to observe and record her own experiences. This has been possible because a large number of personal notes, journals, and letters, written by Florence Nightingale, and now in the hands of the Nightingale family, were entrusted to Mrs. O'Malley for the purposes of her undertaking, and she has made excellent use of this material. The first part consequently is very detailed—too much so, it may seem. But as we proceed we are able to see that the story as told, whether the episodes are pathetic or amusing and whether they bring associations with a great world or with the peasants of a small community, does more than make good reading. It forms an astonishingly accurate introduction to what happened in 1854–56, when a cultured young woman, self-trained (and that only partially), and surrounded by every barrier of social restriction, left the drawing-room and the park for the battlefield and the sick ward to strive against revolting realities, supported by little but high dreams of duty. From the very beginning we seem to see that Florence Nightingale was fulfilling a destiny. At the age of 9 she began to write her life—La Vie de Florence Rossignol—when already she "desired to be useful to sick persons," and family letters to which Mrs. O'Malley has had access, especially letters to her cousin and friend Hilary Bonham Carter, show that always this urge to devote herself to the solace of suffering was with her. When Florence Nightingale was 17 years of age the Nightingale family went abroad, and for the next two years she kept a journal, from which it is clear that she became generously fired with the cause of a united Italy, and developed more interest in social questions than in the splendid displays of art. The Nightingales were wealthy and the continental tour was intended as a prelude to the entry of Florence and her elder sister into fashionable life. But the intention failed as far as Florence was concerned. On return to England, Mrs. Nightingale's own social ambitions, which were acute, were gratified, but by this time Florence had arrived at the conclusion that "the only way to make life real is to do something to relieve human misery." She refused a brilliant offer of marriage; further trouble in Greece and Egypt did nothing to reconcile her to society; a visit to a German orphanage confirmed her intention to be a nurse, and at last, just a year before the outbreak of the Crimean war, she got definitely free from the shackles of home life, obtaining a post as superintendent of a nursing home.

From this point Mrs. O'Malley tells the story of Florence Nightingale's experiences in the Crimea relying for the facts upon public documents, but throwing searching light upon them all by the use of Florence Nightingale's correspondence, and that of a few friends who accompanied her to the seat of war. The various adventures—for much of the hospital work in the Crimea was a series of adventures—are told very simply in those side-lights on history; there is not the slightest attempt to magnify horrors,

and full play is given wherever possible to the lighter side of things, the author following here Florence Nightingale's own method of narrative. And throughout all the second part of the book the feeling grows that Florence Nightingale was fulfilling a destiny; that the advantages and disadvantages of her early life had equally prepared her to answer a terrible call, and further that there was no one else who could have answered it.

Mrs. O'Malley has produced a fine work. The enjoyment of extraordinary opportunities for obtaining the material would have served her little if she had not known how to deal with it. She has recognised and laid stress upon the relevant things, and has thus produced what is practically an autobiography of Florence Nightingale's early years, much as the author of La Vie de Florence Rossignol might have written it.

The Treatment of Schizophrenia.

By LELAND E. HINSIE, M.D., Professor of Clinical Psychiatry, Columbia University. London: Baillière, Tindall and Cox. 1930. Pp. 206. 13*s.* 6*d.*

THIS book seems to be intended for the average psychotherapist of moderate attainments rather than for the research worker or the well-informed specialist. It contains a straightforward account of the treatment of early schizophrenia by means of free association, in the light of psycho-analytic theory. As a scientific contribution to the literature the book is negligible. It lacks adequate clinical data; the number of patients treated, the history and state of each, the period of treatment and of subsequent observation, the precise method of coping in these cases with the technical difficulties that arise in the psycho-analytic procedure—all these are lacking. One finds instead much knocking at open doors, robust attacks on positions long since surrendered, and summaries of points of view which are now familiar. The book, moreover, is loosely constructed, and the form of expression at times is not clear. However, the author has enthusiasm, and concludes that careful and patient treatment of early schizophrenia can do much good—an unexceptionable view, but one that is not yet widespread in this country, where orthodox opinion is pessimistic about the course of dementia præcox however it is treated. This little book is therefore welcome, and may stimulate much useful effort; its directions to the psychiatrist on general management and diagnosis are sound, and the Freudian views of the author do not lead to irrelevant speculation or unintelligibility. The final chapter, a survey of the literature of the subject, is wide and critical, though by no means exhaustive.

Il Colera.

By G. SANARELLI, Director of the Institute of Hygiene in the Royal University of Rome. Milan: Soc. An. Instituto Editoriale Scientifico. Viale Romagna 58. 1931. Pp. 559. 90 lire.

THIS work is one of the most comprehensive monographs we have seen on Asiatic cholera. Prof. Sanarelli is well known for his extensive researches into the pathogenesis of this disease published largely in the Annali d'Igiene. The book is divided into three parts. The first treats of the medical and historical geography, the nosology, pathological anatomy, bacteriology, experimental pathogenic action of the cholera vibrio, the presumed choleraic poison, and the pathogenesis of the disease. Attention is drawn to the work of Filippo Pucini of Florence, who in 1854 described the presence in the fæces of cholera patients of extremely mobile microbes having the shape of an *S*; in 1879—i.e., four years before Koch's researches—the results of Pucini's observations on the same organism were published in a review on the "Morbid Process of Asiatic Cholera." Later, Metchnikoff, from his experimental work, drew the conclusions that Koch's vibrio was the sole agent of Asiatic cholera, and might infect the water and persist there for many years after the cessation of an epidemic, preserving its virulent properties; also that the susceptibility of man to cholera has no constant relation to the virulence shown by the vibrio in laboratory animals. In the chapter dealing with pathogenesis Prof. Sanarelli has incorporated his own work which demonstrated the presence of vibrios in the gastric parietes as well as the intestinal, and the phenomenon of "epithallaxis" (Sanarelli's phenomenon) is fully discussed. The second parts of the book treat of the epidemiology of cholera, chapters being devoted to the predisposing factors, determining causes, bacteriological diagnosis, carriers, therapeutics, and preventive vaccination. The method of treatment by hypertonic intravenous injections devised by Sir Leonard Rogers is stated to have proved highly successful during the epidemic of 1911 in Italy, but other therapeutic measures are also fully described. The third part of the book deals with the propagation of cholera, the Indian and Mohammedan pilgrimages, the methods of protection to be used by local authorities in dealing with epidemics, and international methods of defence, with special reference to the Mediterranean and Egypt. The book is enriched with numerous woodcuts and admirable reproductions of histological specimens, mainly from Prof. Sanarelli's own collection. An extensive bibliography is attached to this excellent book.

Breast-feeding.

By MARGARET EMSLIE, M.B., Ch.B., late Senior Assistant Medical Officer for Maternity and Child Welfare, County Borough of Croydon; formerly Senior Clinical Assistant, Hospital for Sick Children, Great Ormond-street, London; Medical Officer, Southfields Centre. London: Humphrey Milford, Oxford University Press. 1931. Pp. 142. 5*s.*

ARTIFICIAL feeding has of recent years become so widely adopted that much of the lore of Mother Gamp with regard to the natural feeding of the normal baby has to be sought from pædiatricians. It is an unfortunate fact that breast-feeding has been more assiduously preached than conscientiously practised, and Dr. Emslie examines at some length the probable causes for this state of affairs. She begins her book with two clearly written and well-illustrated chapters on antenatal preparation for breast-feeding and the anatomy and physiology of the breast, particular attention being paid to abnormalities of the nipples. The remainder of the work is devoted to the establishment, management, and difficulties of breast-feeding, and a careful consideration of the ways in which premature weaning may be avoided. The author gives some 60 references, not selected on a very critical basis. In a future edition methods of stripping the breast by other than manual expression might well be dealt with at greater length. Both electric and water-suction breast pumps have reached such a high state of efficiency, although they are not yet much used in this country, that they certainly

deserve less cursory reference. The efficiency of these pumps should be made widely known in view of the many occasions (as, for instance, the admission of an infant to hospital) when it is desirable to maintain the milk-supply over a long period, and when the tedium involved in manual expression or the use of the old-fashioned pump frequently leads to abandonment of the struggle. The book provides an up-to-date and practical guide to breast-feeding which should be of real service to physicians and nurses, and could be read with advantage by any intelligent mother.

Text-book of Anatomy and Physiology.

Sixth edition. By ELIZABETH R. BUNDY, M.D. Revised by S. DANA WEEDER, M.D., Assistant Surgeon, Germantown Hospital, Pa. London: J. and A. Churchill. 1930. Pp. 446. 10*s.* 6*d.*

THE aim of this book is to present the more salient features of anatomy and physiology in such a manner that they will be readily grasped by those who do not require too deep a knowledge of the subjects. The book is very well arranged, commencing with an introductory portion dealing with the histology of the tissues, and then proceeding to describe the bones in detail, and the skeleton as a whole. Thereafter the different organs in the body are considered both from their anatomical aspect and their physiology. This combination of "structure" and "function" throughout the book leads to an easy style, and presents a coherent story to the reader. The value of the book is further enhanced by the brief summaries which appear at the end of each section. A helpful feature is the introduction of applied physiology, in the form of "Clinical Notes," which appear throughout the book wherever there is an opportunity of showing the practical application of the points discussed. Very few errors are noticeable, but on p. 175 it is stated that saliva contains two enzymes, ptyalin and maltase; and on p. 178 the phraseology is such as to make one infer that lactase and invertase are the enzymes for the digestion of sucrose and lactose respectively. The section on the sympathetic nerves could be better written. Although the word "autonomic" appears in the index, there is no mention of it in the text; and the parasympathetic nerves are not referred to at all. The book is made more helpful by a plentiful supply of illustrations; and concludes with a brief review of the anatomical relations in the more important regions of the body, and a glossary of anatomical and physiological terms.

Die Funktion der Weiblichen Geschlechtsorgane und ihre Beziehungen zum Gesamt-organismus.

By Dr. ALEXANDER V. FEKETE, Privat-dozent, oberarzt der Graf-Apponyi-Poliklinik in Budapest. Berlin: S. Karger. 1930. Pp. 278. M.12.

THIS book is intended as a supplement to the ordinary text-books of midwifery and gynæcology and deals with subjects usually somewhat neglected in such text-books. The reader will find useful summaries of the German literature on such subjects as the secondary sex characters, the menopause, sterility, dysmenorrhœa, metabolic changes in the maternal organism in pregnancy, the pregnancy toxæmias, the endocrine system, and the female sex organs. English and American work seems to be entirely ignored. To those who wish to have the German literature on the subjects dealt with in handy form the book can be recommended.

Journal of Pathology and Bacteriology.

No. 3 of Vol. XXXIV. (pp. 301–400, March) contains the following: Experimental Tar Tumours in the White Rat, by A. F. Watson (Sheffield). Though it is quite easy to produce epitheliomas of the skin by the repeated application of tar in mice, it has hitherto proved almost impossible to bring off the same result in rats. These animals are now shown to be much less refractory if each application of tar is preceded by one of rat grease.—The Repair in vitro of Embryonic Skeletal Rudiments after Experimental Injury, by Janet S. F. Niven (Cambridge). Up to about five days' incubation injuries to the cartilaginous rudiments of long bones are readily repaired by cartilage; after this, by fibrous and osteogenic tissue. An injured femur continues to develop and differentiate in the normal manner.—Observations on Salmonella Agglutination and Related Phenomena: Fixation of Somatic Agglutinins by Receptors in Solution, by P. Bruce White (London). A technical paper for experts.—The Occurrence of Intranuclear Inclusions in the Nerve Cells in Poliomyelitis, by E. W. Hurst (London). In the early stages of the disease in monkeys and in the only human case examined.—New Lithium Selective and Enrichment Methods for the Isolation of Salmonella Organisms, by J. D. A. Gray (Liverpool). Staphylococci and salmonella are relatively resistant to lithium salts which may be added to media with advantage for their isolation.—Primary Carcinoma of Bronchus, by E. E. Atkin (London). The average age at death of patients with squamous-celled growths is higher than with those of other cell types. Squamous-celled growths are particularly liable to liquefaction and cavitation, and to secondary growths in the other lung.—Tumour Immunity: the Effects of the Eu- and Pseudo-Globulin Fractions of Anti-Cancer Sera on Tissue Cultures, by T. Lumsden (London). The euglobulin fraction contains all the antibodies which are toxic to cancer cells which may thus be concentrated tenfold.—The Effects of Repeated Intrapleural Injections of Electrolytes in the Rabbit—Acquired Insensitiveness of the Lung Epithelium to a Proliferative Stimulus: the Bearing of the Observations on Tissue Resistance, by J. S. Young (Leeds). One intrapleural injection of—e.g., strontium chloride causes a hyperplastic reaction in the epithelium of the marginal alveoli of the lung; a second injection gives no effect. This refractory state wears off in about three weeks.—A Case of Agranulocytosis with Intestinal Changes, by Bo Nordgren (Stockholm).—Capillary Hæmangeioma of Cerebrum, by W. G. Barnard and F. M. R. Walshe (London). These tumours are not uncommon in the cerebellum, but this seems to be the first certain example in the cerebrum where it occurred in the right temporal lobe.—Multiple Teratomata of Peritoneum, by W. G. Barnard (London). A woman of 40 with abdominal symptoms of three months' duration was found at operation to have an ovarian cyst with teratomatous tissue in its wall, and several hundred small teratomatous tumours scattered over the peritoneum, in which nervous tissue was particularly prominent (see p. 1360).—Obituary Notices of A. Leitch (portrait), H. J. B. Fry, Richard Muir (portrait), G. E. Birkett, and A. G. R. Foulerton.

IRRADIATION WITH THE ALPINE SUN QUARTZ LAMP.—In reply to the penultimate sentence of a review of Dr. Hugo Bach's book in our issue of April 25th (p. 921) Dr. R. King Brown writes to say that the translation was prepared from the seventeenth German edition (1927) and brought up to date by the inclusion in an appendix of a recent summary by Dr. Bach on the present position of light treatment, which appeared in *Strahlentherapie*.

GENERAL MEDICAL COUNCIL.

SUMMER SESSION, JUNE 2ND–5TH, 1931.

Committee Business.

EDUCATION AND EXAMINATION COMMITTEES.

Sir Norman Walker presented the report of the Examination Committee. The account it gave of the inspection and visitation of final examinations deserved, he said, close study. The Universities remaining to be visited were mainly on the other side of the Irish Channel; the visitations would probably be completed this year, but not in time for report to the Council's November session. Prof. James Rice, who had been appointed deputy-visitor to the pre-registration examinations, had visited the examinations at Glasgow (Triple Board), London (Society of Apothecaries), and the Universities of Edinburgh, Manchester, Sheffield, and Liverpool. His preliminary reports were being regarded as confidential until he had completed his final report. He had gained a great deal of useful information.

The President presented the Joint Second Interim Report of the Education and Examination Committees on the report by the Departmental Committee of the Ministry of Health on maternal mortality and morbidity. At the last winter session of the Council it had been agreed that the President be requested to write to the Minister of Health pointing out the desirability of providing further accommodation for the teaching of practical obstetrics to medical students. The Minister had replied that none of the hospitals transferred to the London County Council under the Local Government Act possessed a maternity unit large enough for teaching purposes, but that the London County Council were contemplating the provision of a new maternity hospital of 100 beds with facilities for teaching. Provincial medical schools might, the Minister suggested, approach their county borough council to grant facilities in the maternity wards of its hospitals. On the question of a more equitable distribution of confinement cases between medical students and pupil midwives, he referred the Council to the report of the Departmental Committee on the training and employment of midwives, which recommended that pupil midwives in a medical school area should use only material in excess of the needs of medical students. The licensing bodies, replying to the reports, were generally agreed against six months' exclusive instruction in obstetrics, and 30 cases of labour instead of 20, but there was a large measure of assent to the other proposals of the Departmental Committee.

The Joint Committee advised that the Council should delay final action until they received the series of reports by its inspector on the qualifying examinations in midwifery, which were approaching completion.

Sir Robert Bolam, in seconding the adoption of the report, pointed out that some maternity hospitals in connexion with medical schools might find it difficult to do without the grant which they received for pupil midwives.

The President replied that this grant was not payable to all hospitals.

The report was adopted, and the Council directed its circulation to the licensing bodies.

The same committees presented another report on the report by the Society of Medical Officers of Health on the place of preventive medicine in the medical curriculum. The President remarked that the committee sympathised with most of the recommendations of the Society, though some of the details applied to the schools rather than to the Council. The interim report was ordered to be circulated to the licensing bodies. A final report would, said the committee, be presented to the Council on the completion of the series of reports by the inspectors of the final examination.

PUBLIC HEALTH COMMITTEE.

Sir John Moore presented the report of this committee and its recommendation:—

"That in view of the difficulty which some licensing bodies have felt in putting the new D.P.H. rules into operation by Oct. 1st, 1931, the Council desire to inform the licensing bodies that the standing subcommittee of the Public Health Committee of the Council is authorised to consider any exceptional cases submitted to it as heretofore. Such authorisation would include power to grant permission to continue under the old rules during a year of grace up to Oct. 1st, 1932, or such partial adoption of any, or all of the new rules within the same period."

Mr. Monsarrat desired to postpone the operation of the new rules for a year, saying that some of the teaching bodies were apprehensive lest they should have no chance of putting forward their views.

Sir George Newman said that 22 of the licensing bodies had accepted the very slight amendments to the rules, and only six had found difficulty. The amendments had not been initiated in the Council, but the Council had been approached by licensing bodies. Two or three large schools had already made the necessary arrangements to conform.

Dr. Letheby Tidy thought that postponement would involve the main bodies in serious difficulties. The opinions of the bodies could be collected without postponement.

Sir John Moore and Sir Robert Bolam deprecated any alteration in or postponement of the new regulations now that the schools had taken trouble to conform to them. The latter said that advice had been taken from many important sources throughout the country before the rules were laid down, and Mr. Monsarrat's proposal asked the bodies to do something they were quite entitled to do without invitation. The alterations in the new regulations were not of great moment.

Prof. Sheen said that his faculty regarded the alterations as neither few nor unimportant, and desired an opportunity to express an opinion on them, which they had not yet had. Their professor had never been consulted. What was the good of getting the opinion of the licensing bodies except with a view to amending the rules? The bodies were in a coerced position, but they did not like the rules.

Prof. Johnston said that his faculty had not welcomed the rules at all, but had felt that they had no option save to conform. The only point they had welcomed was the substitution of an academic year for a calendar year. No member of the Council was engaged in training men for the D.P.H., and the teachers ought to be consulted.

Sir John Moore reiterated that the recent revision had not been undertaken on the initiative of the Council, but at the request of certain licensing bodies.

Mr. Monsarrat, proposing

"That the licensing bodies be invited to express their views on the new regulations regarding the course of instruction for the diploma in public health,"

said that there was a body of important experience in the country of which the Council had not availed itself. When the Council received their opinion it would, of course, consider making use of it.

Sir Robert Bolam moved that the licensing bodies be invited to make any observations they desired to make, as he thought that most of them would not

now desire to make any. If they felt an answer was required, they would go to great pains to send a considered reply.

Mr. Monsarrat accepted this alteration in his amendment, and it was thus carried.

PHARMACOPŒIA COMMITTEE.

Dr. H. H. Dale moved the adoption of the report of this committee. Since last November, 631 copies of the British Pharmacopœia had been sold, and the stock of 1300 in hand would probably just suffice. The committee reported that it had been occupied in drafting and revising monographs and appendices. The first draft of the new pharmacopœia was nearing completion, but most careful revision and cross-checking of proofs was necessary, and some difficult portions of the text were still outstanding. The committee had been in touch with the Canadian committee on pharmaceutical standards, the committee of revision of the United States pharmacopœia, and the committee of revision of the British Pharmaceutical Codex, and had received a report on the proposed contents of the Australian pharmacopœia.

Sir Norman Walker moved the adoption of a report on subjects remitted to the

COLONIAL AND FOREIGN STUDENTS COMMITTEE.

He said that the task of indexing unacceptable foreign students was in a very satisfactory state. The index now contained 388 names, 153 of which had been definitely refused by the Universities of Birmingham and Manchester. The committee had been in correspondence with Dr. Zappfe, secretary of the Association of American Medical Colleges. The committee was greatly indebted to its friends in America, and felt that a great danger to this country had been averted. It recommended that the work be continued.

DENTAL EDUCATION AND EXAMINATION COMMITTEE.

Mr. Dolamore, presenting the report, drew attention to the repeated applications of an Irish dentist for registration, and the decision of the committee to recommend to the Council:—

"That this application be refused on the ground that registration in the Irish Free State under the Free State Dentists Act, 1928, in virtue of practice does not confer any right to registration here under the Medical and Dentists Act Amendment Act, 1927, and Part II. of the schedule thereto, or otherwise, and that the certificate produced by Mr. Davy is not one which the Council sees fit to recognise as furnishing sufficient guarantee of the possession of the requisite skill and knowledge for the efficient practice of dentistry or dental surgery under Section 10 of the Dentists Act, 1878."

The President pointed out that the Council had no power to recognise such dentists, and the resolution was adopted.

EXECUTIVE COMMITTEE.

At a meeting of this committee immediately preceding the meeting of the Council official notification was read of the reappointment of the following members of the Council:—

Andrew Francis Dixon, M.B., Sc.D., as representative of the University of Dublin for the term of five years from May 18th, 1931.

Herbert Lightfoot Eason, C.B., C.M.G., M.S., as representative of the University of London for the term of one year from Feb. 22nd, 1931.

Sir Edward Hilton Young, G.B.E., D.S.C., M.P., as Crown nominee for the term of five years from May 23rd, 1931.

The Registrar reported that the following names had been restored to the Register, from which they had been erased under Section 14 of the Medical Act, 1858:—

Thomas A. P. Benbow, Flora M. Boddie (I.), Lancelot M. Breton, Alfred L. V. Davin (S.), Charles M. Dickinson, William Hickey (I.), Guy Kinneir, Sidney G. Kirkby-Gomes (S.), Alfred G. McColl, John F. C. O'Meara, George E. O'Riordan (I.), Frederic D. Parbury, Joseph A. Perdreau, Ernest C. Quertier (S.), W. Pritchard-Airey, (S.), Rice Rees, Nora A. McD. Rodger (S.), Richard Le F. Shepherd (S.), Agnes B. Sinclair (S.), Leslie D. Stephen (S.), Albert Max Sully, B. Temple-Ralston, George M. Thompson, S. H. R. Van Ryck de Groot, Patrick W. White (I.), Stanley Wilton.

The committee considered a communication from the Dominions Office transmitting a copy of the Irish Free State Midwives Bill, 1931, which is drafted to amend the Midwives (Ireland) Act, 1918, by providing a penalty not exceeding £10 for any unrecognised person who attends women in childbirth, and by obliging and empowering the Central Midwives Board of the State to frame rules in regard to midwives' badges.

The committee resolved:—

"That any person holding the degree of M.D. or Ch.M. of the University of Cape Town shall be entitled to register either of these degrees as additional titles in the Medical Register."

The committee considered a communication of April 27th, 1931, from Dr. F. Hernaman-Johnson, submitting draft articles of association for a College of Radiologists, but resolved that it was not prepared to express an opinion at present.

At the conclusion of the session of the Council Mr. Norman King was re-elected Registrar with acclamation.

NEW INVENTIONS

IMPROVED LÖWENBERG'S FORCEPS.

AT a meeting of the Laryngological Section of the Royal Society of Medicine held at Nottingham last year, in the discussion on adenoids, several speakers advanced the opinion that catarrhal deafness was not caused so much by a central mass of adenoids as by the small masses in Rosenmüller's fossæ. This is a revival of the teaching of the late Dr. Edward Woakes, who was the pioneer of nasal surgery in this country. He pointed out that it was easy to remove the central mass of adenoids with the curette, which was the instrument generally used, but it was not a good instrument with which to remove the smaller masses in Rosenmüller's fossæ, and it was these masses that caused the inflammation which spread up the Eustachian tubes, thus leading to catarrhal deafness. He therefore devised his modification of Löwenberg's original forceps. These forceps enable one to remove the masses in the fossæ under the guidance of the finger of the left hand. I have further modified his forceps by making them sharp cutting forceps with a male and female blade. There are two sizes, so that the larger ones can be used for the central mass and the smaller ones can get into the fossæ of Rosenmüller's of children quite easily.

The forceps are made by Messrs. Mayer and Phelps, New Cavendish-street, London, W.

GEORGE C. CATHCART, M.D., C.M. Edin.
London, W.

THE LANCET.

LONDON: SATURDAY, JUNE 20, 1931.

VENTILATION OF THE HOUSE OF COMMONS.

THE environment of Members of the House of Commons is a matter of national, it may well be of international, importance. It is generally agreed that the supply of fresh air to the debating chamber is sufficient or more than sufficient, that it is adequately warmed and moistened, freed from suspended matter, chemically and bacteriologically beyond reproach, and yet few of the occupants of the House are satisfied with the result. They complain of cold feet and hot heads, a sense of stuffiness which gives rise to lassitude, and the complaint is so general that it must be based on something more substantial than the multiplicity of individual preference which has led to the provision in the new London County Hall of a supply of hot and cold air under the control of each Member. Since 1854 no radical change has been made in the ventilating system of the debating room. In that year the circulation in the towers was reversed. The principal intake was then at the top of the Victoria Tower where the air was presumed to be purer than at ground level. It was drawn thence by fans to the basement where it was warmed and distributed through gratings in the floor of the chamber, the vitiated air being extracted through apertures in the ceiling by means of heat upcasts actuated by open fires. It was in fact a combination of a feeble plenum combined with a heat exhaust, and was both inefficient and noisy. No provision was made for washing or purifying the incoming air and the atmosphere at the top of the tower was often thick with domestic smoke. In 1854 Sir GOLDSWORTH GURNEY reversed this system by converting both Victoria and clock towers into upcast shafts, fresh air being obtained from the courtyards on each side of the debating hall. The air was warmed in the basement and passed through screens of canvas to arrest dust and soot, and when necessary a spray of water to cool or moisten it. In addition to the openings in the ceilings the vitiated air was removed by ducts in the panelled walls and drawn to the base of the two towers, at the foot of each of which was placed a large furnace. At that time the gas burners used in lighting served as additional extractors.

This was the system of ventilation which engineers came from all parts of the world to see and which is figured in current text-books of hygiene. Sound enough in principle it was beset in practice by all kind of minor drawbacks. The air now being taken in at or near ground level, however carefully screened and filtered, was still apt to carry the noxious smells pervading the precincts of the House, whether from the river at low tide or from the insanitary sewers in the neighbourhood. A reorganisation of the sanitary arrangements in 1886 under the presidency of Sir HENRY ROSCOE eliminated most of these objectionable smells, complaints on this score becoming more and more infrequent. But occupants of the ladies' gallery were annoyed by the smell of horse manure drawn in from the Commons court, and even on the floor of the House Members were exasperatingly aware that tobacco was being smoked in this court. A step forward was taken in 1891 by a committee of which Mr. D. R. PLUNKET was chairman, when the inefficient system of extraction was supplemented by a plenum system, air being propelled into the heating chamber by means of a fan. The inlet was then shifted to the terrace whence the air passed through an ice chamber, a fog filter, and the old canvas strainer to the steam batteries in the heating chamber. That is substantially the system that exists to-day, any changes which have since been made being of a subsidiary nature. In 1902 an investigation of the air of the debating chamber was made from a somewhat new angle in view of the prevailing epidemic of influenza, when a committee declared that from the chemical and bacteriological standpoint the atmosphere was all that could be reasonably desired, a view which was confirmed two years later by Dr. M. H. GORDON'S investigation. In respect of humidity and temperature the air was again shown to be satisfactory. True, a small amount of powdered horsedung rose from the boots of Members walking over the air inlets, and some bacterial contamination occurred during debates from sprayed micro-organisms; neither amounted to much. GORDON however put his finger on the key to the problem when he found the distribution of air in the hall by no means satisfactory. Ten years after this Sir LEONARD HILL and Mr. ARTHUR BARKER expressed their confidence that correct movement of air at not too great a velocity would solve most of the troubles. Had their recommendations been carried out when made in 1913 all would have been well, but the war intervened.

When times again became spacious Sir FRANK BAINES obtained permission of the Board of Works to verify these views, with the help of the National Physical Laboratory, by direct scientific experiment. An eighth full-size model was prepared, air being admitted at velocities eight times those in the actual chamber. The model showed that fresh air was plentiful but that there was room for improvement in the direction and position of the air currents. Using the experience obtained on the model, full-scale experiments were carried out in the House during the summer recess of 1923. Certain simple proposals, which would then have cost little more than £4000, were made with a view of keeping the air of the chamber in a constant state of gentle circulation directed over the faces of the occupants without creating the effect of unpleasant draughts. With correct distribution the input of air could safely be reduced from its present

level of 20–40,000 cubic feet per minute to 16,000, for most of the fresh air admitted has been discharged to the outlets without having been any benefit to the occupants of the room. Why Sir FRANK BAINES's memorandum [1] setting out these experiments in detail has only just been presented to Parliament does not appear. The information has presumably been asked for by the committee now sitting of which Dr. ALFRED SALTER is chairman and before which Sir LEONARD HILL has again expressed his views. The proposed changes are so modest and so closely in harmony with all that is modern in the teaching of ventilation that their adoption should be immediate. Warmer feet and cooler heads will be needed this session.

HOSPITALS AND THE EXPENSE OF TRAFFIC CASUALTIES.

THE Minister of Transport has undertaken to remove one of the flaws in last year's Road Traffic Act by repealing subsection (3) of Section 61 which victimised the free conveyance of the local cricket team or school-children's outing. This step, he says, can only be taken by a one-clause Bill treated as non-controversial, and no other amendment of the Act can be undertaken. Otherwise it might have been possible to invite his aid in respect of another part of the Act which was framed to assist hospitals but which is not operating to their proper advantage. Part II. of the Act arranged for the compulsory insurance of the user of a motor vehicle against third-party risks. It has been notorious that the resources and accommodation of our hospitals have been considerably strained by the requirement of treating local traffic casualties. It was felt that, if a patient, injured by a motor accident, recovered compensation under the system of compulsory insurance, the hospital ought somehow to be recouped the expense of his treatment. Section 36 of the Act sought to give a remedy by enacting that, if the insurance company became aware that a person had received treatment in a hospital for fatal or other bodily injuries arising out of a motor traffic accident, the company, when making a payment under the Act, should also pay the hospital the reasonable expenses of such treatment up to a maximum of £25 for each patient. A proviso was added which excluded the application of the foregoing provision where a charge has been made by the hospital for such treatment.

Experience of the working of this enactment is unsatisfactory. It is even possible that in many cases the hospitals would have been better off if the enactment had not been passed, because not a few patients regard compulsory insurance as a complete substitute for voluntary payment to the hospital. Often, of course, the system of compulsory insurance amounts to nothing at all. A motor-coach, let us suppose, runs amok near a crowded pavement and fills the casualty ward of the local hospital. It is ascertained that the vehicle became suddenly unmanageable through a broken axle caused by an undiscoverable flaw in the metal. The accident, say the coach-owners, was not due to negligence but to an act of God; in consequence no payment can be made. Where there is a reasonable prospect of the insurance company making some payment, the settlement may be hung up for a twelve-month while the law courts decide the issue of liability. At the end of that period, if the insurance company succeeds in escaping liability, it is frequently too late to trace the patient and extract from him a voluntary payment; moreover, his sense of gratitude may by that time be less acute. The common-sense practice would be for the patient, when his treatment is ended, to make the hospital such contribution as he can afford, and for this contribution to be deemed a payment on account—an advance which should not prevent the insurance company from making its statutory payment eventually when liability is established. Unfortunately such a practice seems to be ruled out by the proviso (already mentioned) which excuses the company from paying the hospital "where a charge has been made by the hospital in respect of such treatment." The hospital wants three things—first, to recover the expenses of treating the patient; secondly, to recover them promptly; and thirdly, to recover them without endless labour in tracing ex-patients. When a traffic accident brings a patient into the hospital ward, it is easy to ascertain the insurance company concerned, but it is difficult to find out enough about the patient (often a stranger to the district) to ensure the hospital getting into touch with him several months afterwards. The situation seems to call for some amendment of the law. It is for the hospitals to consider what is feasible.

EXPERIMENTAL PRODUCTION OF GALL-STONES.

GALL-STONE formation is generally attributed either to infection, metabolic disorder, or biliary stagnation. Nowadays most clinicians think that a primary gall-bladder infection, probably blood-borne, is the fundamental cause of almost all types of gall-stone, including even the pure cholesterol monolith, which was formerly regarded as of metabolic origin. The factor of biliary stagnation has received less attention of late, although it has often been suggested that the pregnant uterus may predispose to cholelithiasis by mechanical hindrance of the flow of bile.

Since through cholecystography we have come to recognise more fully the concentrating activity of the gall-bladder, it has seemed more likely that a prolonged stay in the gall-bladder may produce a bile so thick that minute solid particles may be precipitated and form nuclei for calculi. Interesting experimental work by WESTPHAL and GLEICHMANN [1] supports this hypothesis, and suggests that, at least in the animals used, stagnation of the bile is the essential cause of gall-stones. These workers used in all 50 dogs for their experiments,

[1] House of Commons (Ventilation). Cmd. 3871. H.M. Stationery Office. 1931. 1s.

[1] Gallenwegsfunktion und Gallensteinleiden (v). Westphal, K., Gleichmann, F., and Mann, W. Berlin: Julius Springer. 1931. Pp. 227. R.M.18.

but for various reasons they have excluded 10 of these in drawing their conclusions. In 16 dogs the biliary flow was artificially obstructed for periods of from 1 to 11 days; in 22 it was obstructed for periods of from 26 to 235 days. As far as possible an aseptic stagnation was produced, and this was done by ligaturing the bile-duct at various sites and for various lengths of time. In some cases there was total obstruction over long or short periods; in others it was only partial. Further, in some dogs artificial infection of the gall-bladder was carried out in addition, while yet others had excess of cholesterol in their diet. Infection occasionally developed during the experiment as a result of the operation. Always there was a very thorough examination of the bile—removed through a needle—at the beginning and end of the experiment. In a considerable proportion of cases concretions in the bile were produced, varying from almost microscopic particles to the size of large peas or beans, and consisting mainly of pigment. In one case there were definite concentric layers, but in none of them was a definite cholesterol deposit found. A striking feature of the results is that such concretions were produced by simple partial obstruction as frequently as by total obstruction, and that they were apparently independent of any coexistent infection. Indeed, infection sometimes seemed to prevent concentration of the bile and lessen the incidence of concretions. An obstruction of one or two days was enough to produce the first signs of "stone formation," though they disappeared when the obstruction was removed; thus of the 16 dogs in which the obstruction lasted less than 12 days, 13 showed definite naked-eye precipitations in the bile.

The burden of these results is that bacteria play only a minor and secondary part in the causation of gall-stones, and that infection is certainly unnecessary for their production. Though the conditions are not applicable directly to man without reserve, their significance is clear, and must impress the reader with the importance of an obstructed flow of bile.

PUBLIC HEALTH IN SCOTLAND.

THE Department of Health for Scotland has issued its second annual report, some of the main features of which we summarised recently.[1] The year 1930 is described as a peculiarly difficult one, but the difficulties to be overcome were mainly external: the continued widespread unemployment and the transfer to the new local authorities of poor-law medical service and school health administration. The number of detailed adjustments involved in this transference must have been enormous, and all the while the administrative activities had to go on steadily over the old field. In form the report follows the lines established seven years ago, and adds another to a series which gives a fairly complete picture of the historical growth of public health in a small and well-organised nation. During the year research has been raised to a better plane. The Department set up a scientific advisory committee on medical administration and investigation, with Dr. PARLANE KINLOCH as chairman, representing all the chief departments of medical and biological research. On the advice of this committee, of which Sir WALTER FLETCHER is a member, a report was issued on the Aberdeen investigation into maternal mortality. Early in the year, with the financial help of the Empire Marketing Board, the Department's officers organised a large scale investigation into the effect of raw and pasteurised milk on the growth of 20,000 children in 67 Lanarkshire schools. Research has continued into the importance of the mineral balance in nutrition, the special problem being the mineral differences between human and cow's milk. A special investigation is being made into the incidence of infection in tuberculous milk. Some 10,000 samples are to be analysed biologically at five laboratories by an identical technique, the details of which are to be fixed, with the consent of the Medical Research Council, by the bacteriologists themselves. Not a bad record for the first complete year of a new department. Meanwhile, the staff has been strengthened by the addition of a bacteriologist and a medical statistician. The analysis of tuberculosis returns is correspondingly elaborate; the decline continues to be steady and considerable. In 1920 the death-rate from all forms was 124 per 100,000 of population; in 1930 it was 88. In respiratory tuberculosis the numbers fell from 4194 in 1920 to 3024 in 1930, equivalent to rates of 86 per 100,000 and 62. The decline is steeper than in the general death-rate.

School health administration is 23 years old in Scotland, and the figures recorded show a better standard of cleanliness and a steady amelioration in malnutrition, rickets, and defective teeth. The very large field covered by school treatment can be grasped only when the thousands of cases of eye defects, ear defects, skin diseases, throat diseases, and the like, are scrutinised in the tables. When it can be said that in a total attendance of 741,801 children, 263,334 were examined medically, 82,634 re-examined, and 146,332 subjected to special examination, vigilance may be regarded as fairly effective. Now that the Scottish Education Department has made a medical man a principal assistant secretary and appointed another medical man as inspector of physical education, the integration of the school health service with physical education will no doubt proceed more rapidly. In the Highlands and Islands medical service and in maternity and child welfare the work is now largely organised routine; but the former is still growing, as shown by the appointment of consultant and operative surgeons for the northernmost fringe, including Shetland and Lewis. Under the Housing Act of 1930 leeway is being rapidly made up, and the programme in contemplation almost reaches the figure suggested by the Royal Commission on Housing. Other social services are kept running at full pressure. The poor-law has been lightened by the transfer of 33,000 cases to unemployment insurance, but even so the burden reaches 37 per 1000 of the population.

[1] THE LANCET, June 6th, p. 1258.

Unemployment is nearly everywhere worse in Scotland than in England.

In the very full section on national health insurance and pensions a new departure is the chapter on Morbidity in the Insured Population. For nearly 20 years insurance practitioners have made periodic returns of their cases of sickness. Some time ago a departmental committee inquired as to the statistical use to be made of those returns; but, in Scotland at least, the investigation did not lead to any statistical results until now. Within its first year, the Department was able to make arrangement with the approved societies to get periodic information about certificates of sickness. The old system of medical returns has been dropped, and the new system began last July. The chapter containing the preliminary statistical results is worth careful study. In the fullness of time the facts about certification will become an important index of the incidence of sickness in the industrial community. One striking fact is brought out—namely, "that morbidity, so far as concerns mere frequency of certification, is quite at variance with mortality in which increasing age is accompanied by a progressively higher death-rate." In certification "the frequency of a disease is in inverse ratio to its fatality," and this paradox is illustrated by many group facts. The biggest percentage of sickness certificates comes from the age-group 16–19 and, except for the years 50–59, the ages above 19 show a progressive diminution. This is a hint for more intensive investigation of the early ages. The Department is to be congratulated on a well-loaded and well-presented report.

ANNOTATIONS

PHYSIQUE AND HEALTH IN KENYA.

It is often stated that native tribes manifest a much finer physique and enjoy much better health than the decadent inhabitants of civilised countries. Some field work on two native tribes in Kenya[1] suggests strongly that the physique of these people is often inferior to that of Europeans and that disease is quite as prevalent among them as elsewhere.

Among 14,440 native men employed on the Uasin Gisy Railway, the death-rate was 35·4 per thousand, and 5331 were admitted to hospital in a year. The principal causes of death are diseases of the respiratory system, especially pneumonia and tuberculosis. Ulcers of the leg and intestinal disturbances account for much sickness. The investigation here reported was undertaken with the primary object of obtaining more information about the incidence of disease in natives in reserves and their diet. A physical examination was made of 6349 Kikuyu adults and 2500 children and of 1546 Masai adults and 254 children. The Akikuyu are a Bantu tribe, numbering about three-quarters of a million and occupying part of the highlands of Kenya between the Equator and one degree south. Their diet consists chiefly of cereals, plantains, tubers, legumes, and green leaves; 60 per cent. of the diet of the men consists of maize or millet and a further 25 per cent. of sweet potatoes. The women have a virtual monopoly of the green leaves. Very little cow's milk is available and the goats are used mainly as currency instead of as a source of milk or meat. Edible earths are a common article of diet, especially among the women and children. Magadi soda is also largely used as salt. The Masai are a pastoral tribe living on milk, meat, and blood. The non-fighting classes also eat a certain amount of beans, millet, bananas, arrow-root, maize, sugar, and honey. Berries are taken by warriors on hunting expeditions and by pregnant women. An analysis of the chemical composition of the native foodstuffs, earths, and mineral waters showed that the Kenya leaves have a strikingly high calcium and chlorine content; their addition to a diet of cereals and potatoes would therefore tend to correct the calcium deficiency. The manganese content of the leaves and of the plant ash used as salt substitute was also found to be very high. Some of the edible earths are rich in sodium, phosphorus, or iron. The total solids and fat in Masai milk are high. The Kikuyu women's special foods, therefore, increase the intake of calcium and sodium. The diet of the Kikuyu male is adequate in protein but very low in fat and calcium. The Masai diet, in which there is less difference between the sexes, contains a liberal supply of mineral elements and a large excess of protein and fat, but is low in carbohydrates, cellulose, and other indigestible residues.

It was found that the Masai grow more rapidly than the Kikuyu and are on an average 5 in. taller, 23 lb. heavier, and 50 per cent. stronger; they are larger in the chest and smaller in the abdomen. The Kikuyu children commonly showed signs of malnutrition and rickets, a high incidence of dental defect, anæmia, spongy gums, enlarged tonsils, and cervical adenitis. The Masai village children presented a totally different picture, defects and anæmia being uncommon. The adult Kikuyu suffered more from yaws, malaria, conjunctivitis, helminthiasis, and ulcers, but the diseases of the Masai were principally constipation and arthritis. The Masai had no tribal immunity to pulmonary conditions—in gaol they seemed peculiarly susceptible—and their superior resistance under natural conditions was probably correlated with diet and environment. A study of the routine hospital and prison diets in Kenya showed that they were markedly deficient in calcium. The Kikuyu women were healthier than the men.

The committee desire to make it clear that the investigations are only preliminary; nevertheless, some of the problems raised are fundamental. The striking difference in physique between the Masai and the Akikuyu raises the question to what extent diet can affect the stature and physique of a race, and recalls the Scottish experiments in which additional milk for school-children was followed by an increased rate of growth in two successive years. There was, however, nothing to show whether, if the milk had been continued, there would have been an ultimate difference in adult stature. Another most important problem is the possibility that diet may influence susceptibility to certain infectious diseases. This investigation brings forward data to support the suggestion that deficiencies in diet, abnormal composition of the blood, and reduced susceptiblity to certain diseases may be correlated. The problem concerns not only public health authorities but also agricultural authorities. A general improvement of

[1] Medical Research Council Special Series No. 155. The Physique and Health of African Tribes. By J. B. Orr and J. L. Gilks. London. 1931. Pp. 82. 2s.

agriculture and animal husbandry amongst the Akikuyu would almost certainly be accompanied by an improvement in the health and working capacity of the natives. The problem is not confined to Kenya; it appears to exist in many of our tropical dependencies. The loss of health and efficiency attributable to deficient diet is therefore of considerable economic importance. The Empire Marketing Board is to be congratulated on its foresight in promoting research of this kind.

THE BERCOVITZ TEST IN PREGNANCY.

A YEAR ago Z. Bercovitz [1] described a pupillary test for pregnancy: the instillation into the eye of one drop of a 10 per cent. solution of sodium citrate mixed with five drops of the patient's blood. A positive reaction consisted in a dilatation or contraction of the pupil compared with that of the other side. The reaction has lately been tested by A. J. Gordon and S. W. Emmer [2] on 110 consecutive patients examined at the prenatal clinic of Newark City Dispensary. A number of doubtful reactions occurred in negro women, in whom it is sometimes very hard to read the pupil, but in this series no patient who was not pregnant gave a positive reaction, although several cases of pregnancy gave negative reactions. In the opinion of the investigators the Bercovitz test is a valuable aid to the diagnosis of pregnancy. It is certainly much simpler and quicker than the Zondek-Aschheim test and can be done at once in the consulting-room or clinic.

MENTAL CHANGES IN PERNICIOUS ANÆMIA.

AT a recent quarterly meeting of the Royal Medico-Psychological Association Dr. Norman Phillips, of St. Andrew's Hospital, Northampton, initiated a discussion on the mental disorders associated with anæmia of pernicious type. In his experience these ranged from slight modification of character shown in irritability and unstable moods to definite paranoia with delusions of persecution and suspicion. Such mental states might occur at any stage of the anæmia and Prof. G. M. Robertson recounted a case in which acute mental symptoms developed quite early. Dr. W. F. Menzies remarked that he had seen only four cases of the association at Cheddleton of recent years, but a study of the literature would suggest that if deviation from the normal mental outlook be included such cases are not uncommon. R. C. Cabot noted mental symptoms in 104 (15 per cent.) of 647 cases of pernicious anæmia collected from American sources, and H. W. Woltmann reported [3] that in 1498 cases of this disease treated at the Mayo Clinic between 1917 and 1924, 4 per cent. had definite psychoses whilst 35 per cent. suffered from milder mental disorders. It is therefore rather singular that only one of five text-books on psychiatry published in this country refers to the mental aspect of pernicious anæmia. In a review which appeared not long ago in our own columns [4] Dr. D. McAlpine described varying degrees of mental disturbance in 11 out of 17 cases of pernicious anæmia whose mental condition he had examined. Three showed simple depression with lack of mental energy; one of these committed suicide despite adequate liver treatment. In four cases there was a mild state of mental confusion associated with failure of memory, indifference and a tendency to somnolence. In three the disturbance was more profound and was typical of a toxic psychosis; two of these had begun abruptly with confusion, excitability, amounting in one case to mania, and ideas of persecution and suicide. The majority of Dr. McAlpine's cases showed signs or symptoms of subacute combined degeneration of the spinal cord, but he could establish no direct relationship between the degree of anæmia and the intensity of the mental symptoms. Other writers have described a similar train of symptoms. Sometimes the depression and insomnia have suggested a manic-depressive state, but the recognition of a glossitis or an examination of the blood has led to the correct diagnosis. In the milder cases a diagnosis of neurosis or neurasthenia is apt to be made. Variability in mood, mental as well as bodily fatigue, difficulty in concentration, lack of interest, a sense of apprehension, and a tendency to somnolence are the commoner symptoms, and coincident with this altered mental outlook are frequently found early symptoms of spinal cord involvement, such as paræsthesiæ or referred pains. The blood picture is rarely that of a frank pernicious anæmia; as a rule the degree of anæmia is slight and an ordinary blood count may show no distinctive features. F. W. Langdon has drawn attention [5] to a group of cases in which the nervous and mental symptoms precede the typical picture of pernicious anæmia. His views met with little favour at the time but facts have since come to light in support of them. In Scandinavia for instance, E. I. Warburg and S. Jorgensen have described [6] the association of psychoses and neurasthenic states with achylia gastrica and megalocytosis. They remark that the advent of pernicious anæmia is rather a late stage in this condition; a low colour index may be present at an early stage. The effect of liver treatment on the mental symptoms seem to vary, but as recoveries have been reported the importance of recognising these cases early is evident. At the discussion mentioned Col. J. R. Lord remarked on the importance of a vigorously functioning liver in preserving a cheerful mentality; a morning liver-cocktail might not be an unwise habit. In any case it would be prudent to make inquiry for a history of glossitis and an examination of the gastric contents and of the blood—especially for megalocytosis—in neuroses and psychoses, especially of the toxic type, appearing for the first time in persons over the age of 35.

TENSION OF GASES IN THE TISSUES.

THE tension of the gases in the body tissues generally has not received the same attention as their tension in the blood. The statement has been commonly accepted that in the tissues carbon dioxide, in virtue of its manufacture there, is under a positive pressure; whereas oxygen, because of the demand for it, is at a very low or even negative tension. Dr. J. Argyll Campbell's new investigations [7] are based on the fact that when a gaseous phase and a liquid phase are brought in contact the gases in the two phases commingle with each other, until eventually the pressures of the individual gases in both are equal. In carrying out the observations nitrogen is usually injected into the tissues, and after equilibrium is established the gas is withdrawn and analysed and the pressure of its components is determined. Dr. Campbell says that in no tissue

[1] Amer. Jour. Obst. Gyn., 1930, xix., 767.
[2] Ibid., May, 1931, p. 723.
[3] Amer. Jour. Psych., 1924, iii., 435.
[4] THE LANCET, 1929, ii., 643.
[5] Jour. Amer. Med. Assoc., 1905, xlv., 1635.
[6] Act. Med. Scand., 1928, lxix., 537; and 1929, lxx., 193.
[7] Physiol. Rev., 1931, xi., 1.

examined was the tension of oxygen below 20 mm. Hg; and it usually varied between 20–30 mm. He concludes that so great is the capillary supply, that even in resting muscle it is not possible to have a zero oxygen tension. In no case was there any evidence of the tension of oxygen in the tissues exceeding that in the arterial blood. A number of observations were undertaken bearing on the controversy on secretion versus diffusion of oxygen through the pulmonary alveoli at high altitudes. Animals were exposed to low pressures of oxygen for prolonged periods and it was found that the oxygen tension in the tissues fell, and remained low even after acclimatisation. From this it was inferred that if secretion was taking place it was not helping the tissues in any way. It was shown also that the coincidently lowered tension of the carbon dioxide in the tissues had no great effect upon ability to tolerate the low oxygen pressure in the inspired air. This was demonstrated by the fact that although cats and rabbits both exhibited the same low CO_2 tension, cats did not tolerate the low O_2, although rabbits did. It was not found possible to lower the O_2 tension in the tissues more than 40 per cent. of normal without the risk of death; hence the idea of a "nil" tension of this gas is held to be absurd. Oxygen was almost absent from the lumen of the gut, this gas being readily absorbed by the mucosa. It was shown that the mucous membrane of the stomach may absorb as much as 12 c.cm. of oxygen per minute. Discussing air swallowing in certain dyspeptics, Dr. Campbell suggests that it is possible that air is swallowed to supply oxygen to an abnormal mucous membrane. The gases in the large intestine, as would be expected, were found to vary with the diet, milk giving a large preponderance of hydrogen, a vegetable diet yielding marsh-gas. The high tension of these gases leads to their absorption, and excretion by the lungs, but the hydrogen being relatively unabsorbable is liable to produce distension. It has been estimated that six litres of carbon dioxide is liberated daily in the gut by the action of acids upon the sodium bicarbonate of the intestinal juices; this gas is readily absorbed, and excreted by the lungs. Dr. Campbell also indulges in speculation about the possible cause of tetany. Having shown that after muscular exertion the oxygen tension in the tissue is 25 per cent. above normal he analysed various predisposing causes of tetany, and found that in 11 out of 14 types experimentally produced there was an oxygen deficiency in the tissues. If one factor alone is responsible, the most constant is oxygen-want. It is suggested therefore that tetany is an effort to raise the oxygen tension.

MULTIPLE TERATOMATA.

TERATOMATA are generally explained as examples either of parthenogenesis or of the inclusion within the body of one of the members of a pair of identical twins arising from the separation of cells in the early divisions of the egg. Certain rare cases occur, however, which cannot with reason be brought within either of these categories, and their existence raises a suspicion that neither hypothesis may be necessary. Such an example is recorded by Dr. W. G. Barnard from University College Hospital.[1] A woman of 40 had ascites and abdominal discomfort for three months. At operation a cyst was found in the left ovary and numerous small tumours scattered about the peritoneum with larger masses in the omentum. She died 12 days later of peritonitis. The cyst, which contained no hair or sebum, was bilocular and in the diaphragm between was well-formed bone. Projecting from the ovarian surface of the cyst and continuous with the diaphragm was a solid lump of tissue which showed the same histological structure as the growths in the omentum and on the peritoneum, of which there were more than a hundred. All were typical teratomas and contained undifferentiated cells, spindle cells in groups and bands, cartilage, bone, a tooth, skin, columnar mucous epithelium and brain, including glia and nerve ganglion cells indistinguishable from the normal. No placental tissue was identified. To explain these facts a great many hypotheses might be made up. But the only reasonable interpretation seems to be that some months before the patient's death the tissues in the ovarian cyst broke out and were disseminated about the abdominal cavity, not as developed teratomata but as single cells or at most small groups of cells, each of pluripotent or totipotent capacities and capable of giving rise to most sorts of tissue. Dr. Barnard's and other cases seem to make it certain that such cells do or may exist or arise in the adult body; they would be more useful if they appeared in amputation stumps and achieved the regeneration of a limb as they do in lizards' tails. And it is plainly possibly that they might be the source of all teratomata.

[1] Jour. Path. and Bact., 1931, xxxiv., 389.

DRAINAGE OF THE AQUEOUS HUMOUR.

IT is a somewhat humiliating reflection that even now there is no universal agreement among ophthalmologists on some of the fundamental facts of ocular physiology. Especially is this true of problems connected with intra-ocular tension and the circulation of fluids in the eyes. A recent controversy concerns the drainage of the anterior chamber, a matter of the first importance in connexion with glaucoma. What is generally taught is that the normal drainage of the aqueous humour takes place via the spaces of Fontana and Schlemm's canal, a slit-like space encircling the cornea, and connected both with lymph spaces and veins. W. S. Duke-Elder[1] maintains that only where intra-ocular pressure is abnormally increased is there any circulation of the intra-ocular fluid at all, properly so called, but that any change in the composition of the aqueous takes place by dialysis between it and the capillaries of the iris and ciliary body. Only in case of raised intra-ocular pressure can the condition of the venous circulation allow of the actual flow of aqueous fluid into the general circulation via Schlemm's canal. Lately this view has been challenged by Mr. F. Ridley,[2] who maintains that Schlemm's canal has no direct connexion with the venous system, but that there is a constant drainage of aqueous through the cornea into the conjunctival sac and that this drainage takes place chiefly via the filtration angle, where Descemet's membrane is absent. This thesis he supports by experiments on excised pigs' eyes and on the eyes of living rabbits. He maintains that the physiological conditions are such as to determine the constant passage of fluid through the cornea, that the flow takes place chiefly at the filtration angle and that its rate is determined by the intra-ocular pressure. We know by everyday

[1] Nature of the Intra-ocular Fluids. Monograph Supplement to the Brit. Jour. Ophthalmol., 1927, iii., 77.

[2] Brit. Jour. Exper. Path., 1930, xi., 217; Trans. Oph. Soc., 1930, l., 268.

experience that solutions of drugs such as atropine enter the eye from the conjunctival sac. The assumption that the fluid contents of the eye can pass outwards by the same route does not, on the face of it, appear improbable. On the other hand, Mr. Duke-Elder,[3] criticising Mr. Ridley's work, puts forward an experiment which to his mind is conclusive. A solution of methylene-blue is introduced into the anterior chamber of an anæsthetised dog under a pressure not exceeding 2 mm. In a minute and a half the episcleral veins are deeply dyed, whereas there is no coloration of either cornea or conjunctival sac. Mr. Ridley [4] replies that this experiment is irrelevant to his thesis. The methylene-blue, he says, has not reached the episcleral veins via Schlemm's canal, but via the capillaries of the ciliary body and iris by a process of simple diffusion. He objects that a minute and a half is too short a time for diffusion through the cornea into the conjunctival sac to appear. If that is all, however, it would surely be easy for him to repeat the experiment and allow a longer time for the appearance of the blue in the conjunctival sac. It does not appear that Mr. Ridley has succeeded in proving his point that the part played by Schlemm's canal in the drainage of the intra-ocular fluid is negligible. In this connexion we may recall a theory put forward by Prof. Arthur Thomson [5] at Oxford many years ago to the effect that that part of the ciliary muscle which is attached to the scleral spur takes an active part in widening Schlemm's canal, causing a negative pressure in it so that every act of accommodation must tend to facilitate drainage of the aqueous fluid. These physiological problems are not easily solved, but until agreement is reached there seems to be a certain futility about discussion of the pathological problems connected with glaucoma. Meanwhile treatment, and especially operative treatment, must remain largely empirical.

For a summary of the modern views on these physiological problems we may refer readers to an address by Mr. Duke-Elder published in THE LANCET of Jan. 4th, 1930.

ALCOHOLIC FERMENTATION.

EVERYONE is aware that the Lister Institute is doing pioneer work on filtrable viruses and accessory food-stuffs. The report presented to the annual general meeting on June 10th makes it clear enough that there is a similar liveliness in the department of biochemistry. During the year a definite stage was reached in Dr. R. Robison's investigations of the phosphoric esters formed during alcoholic fermentation. The attempt to separate and identify the component esters of hexosemonophosphate was begun some years ago in collaboration with Dr. E. J. King and the isolation of a glucosemonophosphoric ester has already been reported, but the properties of this compound showed that it still contained about 10 per cent. of some other ester of lower reducing power. The final stage in its purification has now been achieved. Evidence of the homogeneity of this ester was given by its behaviour on hydrolysis with acids, while the examination of the products obtained from it by hydrolysis and by oxidation and dephosphorylation have proved that it is a monophosphoric ester of glucose. Further evidence was obtained that the phosphoric acid group is attached to the terminal carbon atom of glucose and this conclusion has been confirmed by the study of its methylated products, carried out by Dr. W. T. J. Morgan, Dr. King, and Dr. R. R. McLaughlin. A second ester also isolated from hexosemonophosphate was shown to be very similar to Neuberg's fructosemonophosphate, while considerable progress has been made towards the separation of the residual fraction, in which at least one unidentified ester is known to be present. It had been previously mentioned that hydrolysis of fructosediphosphate by bone phosphatase does not yield pure fructose but a mixture of sugars containing glucose and fructose. A similar result was obtained on hydrolysis of the pure glucosemonophosphate by phosphatase. This increased lability of the hexose molecule during enzymic removal of the phosphate group is of much interest and may possibly throw some light on the mechanism by which esterification with phosphate facilitates the reactions occurring in carbohydrate metabolism.

Experiments have also been made by Prof. A. Harden and Miss M. G. Macfarlane (Carnegie Fellow) on the reducing properties of yeast with special reference to the alleged need for a co-reductase. Dried yeast which has been so thoroughly washed that it will not ferment a hexosephosphate without addition of coenzyme does not reduce methylene-blue, but can be reactivated by the addition of boiled yeast extract. Such a preparation can also be reactivated by the addition of a lactate, without any other addition. The reduction of methylene-blue which then occurs is accompanied by the evolution of a quantity of carbon dioxide approximately equivalent to the methylene-blue reduced, and arising presumably from the decomposition of the pyruvic acid formed from the lactate by oxidation. This observation affords no ground for the assumption that a co-reductase is required.

UPPER RESPIRATORY INFECTION AND RHEUMATISM.

THE relation of upper respiratory infection to rheumatism in childhood has long been argued over. Their association has indeed been noted for two centuries or more, though it remained until lately in the limbo of "clinical impression." W. P. S. Branson, in 1912, maintained that the mucous membrane of the nasopharynx provides the port of entry of the causative organism, and J. A. Glover in his Milroy lectures of 1930 adduced evidence of droplet infection.[1] Perhaps the most valuable contribution to the subject, however, is B. E. Schlesinger's description [2] of epidemics of nasopharyngeal infection in a convalescent home for rheumatic children. He found that the acute infection was often followed, after a latent period of 10–21 days, by acute arthritic or cardiac manifestations. This latent period suggests an allergic factor in the disease, and Schlesinger's original observation has opened up a new line of rheumatic research. Similar epidemics of upper respiratory infection in wards of convalescent rheumatic children at the Cheyne Hospital and the Lancing Convalescent Heart Home have now been studied in detail by Dr. W. Sheldon, and one of them by Dr. W. R. F. Collis from the bacteriological point of view. Their papers published in this issue show that here, too, there was a latent period between the original infection and the relapse, and the figures, with those of Schlesinger, indicate that while tonsillectomy may give some protection against upper respiratory infection, rheumatic relapses are relatively commoner in children whose tonsils have been removed. Sheldon did not find aspirin an adequate

[3] Brit. Jour. Ophth., 1930, xi., 621. [4] Ibid., Feb., 1931, p. 102.
[5] Ophthalmoscope, 1911, p. 470; Med. Annual, 1913, p. 254.

[1] THE LANCET, 1930, i., 499.
[2] Arch. Dis. in Childhood, 1930, v., 411.

prophylactic against relapses, and points out that these may occur while the temperature is normal.

The bacteriological findings are more controversial. Since the classical work of F. J. Poynton and A. Payne in 1900–04, many investigators have described organisms which they have held responsible for the manifestations of rheumatism and which have sometimes given a high proportion of positive skin tests in rheumatic subjects. Usually the organisms have been streptococci, and attention has mostly been focused on those of the non-hæmolytic group. But there is little similarity between many of the strains described, and arthritic lesions have been produced in rabbits by streptococci unrelated to rheumatism. Many authors on the other hand have found no one type of streptococcus consistently present in cases they have examined, and R. A. Macdonald,[3] reporting recently on a series of tonsils removed at operation, said he found it impossible to distinguish between the cultures from those removed from rheumatic children and those from the controls. In the epidemic at the Cheyne Hospital, Collis has isolated hæmolytic streptococci from the throats of patients in whom relapses occurred and has carried out skin tests with a soluble endotoxin and an exotoxin prepared from this organism. He finds rheumatic subjects highly sensitive to the former except during fulminating carditis. Control tests showed a high proportion of negative results. Further investigations on these lines will be awaited with interest, but at present the number of cases studied is small.

LOW BACK PAIN.

PAINS and disabilities centring in the lower back are often exceptionally difficult to diagnose and treat. At a lecture-demonstration at the British Red Cross Clinic for rheumatism on Tuesday, Dr. C. B. Heald classified the chief causes of low back pain into four groups: the "injury" group; the "constitutional disease" group (e.g., rheumatism, arthritis, gout); the "toxic" group, where the cause is constipation, appendicitis, or gonorrhœa; and the "congenital defect" group, where the pain springs from some anatomical abnormality, especially in a vertebra. Each of these groups has roughly its own diagnostic language, though of course most cases are to a certain extent mixed, but the clinician is often able to form fairly sound suspicions of the ætiology from a consideration of the physical type of the patient. According to Dr. Heald, patients can be divided broadly into the long-backed, the florid, the asthenic, and the healthy normal types. The possessors of long backs are, he says, especially liable to pure trauma, for they are working against an especially unfavourable leverage. Patients with a florid stout appearance should suggest arthritis or gout as the chief enemy. The toxic group of low back disabilities is chiefly made up of patients of the asthenic type, who show lordosis and kyphosis. The congenital defect is elusive, and its diagnosis depends largely on the elimination of other causes and an X ray.

Dr. Heald demonstrated tests of value in diagnosis and in the control of treatment. Mennell's test determines any inflammation or irritation of the roots of the sciatic nerve; the psoas and sacro-iliac joint are tested by the leg-lifting test, compression and separation of the iliac crests, arching the back in the prone position, and passive hyperextension of the hip-joints. Specific injury, if it does not fracture a transverse process, mostly tears fibres in the common aponeurosis or the ilio-lumbar ligament, and the patient will be able to lift one leg but not both when separated. Mennell's test will often find out the "constitutional disease" type, in which the arthritic or rheumatic lumbar spine irritates the sciatic nerves, while the patient will lift both legs and submit to having the iliac crests firmly handled. Moreover, he cannot stand hyperextension of the hips. Patients in the toxic group are also likely to show a positive Mennell's test on the painful side from sciatic involvement, and a slackness of the common aponeurosis which hinders leg-lifting. Their sacro-iliac joints are tender from loss of tone rather than acutely painful from definite injury. Trunk-lifting generally leads to dismal failure through rapid muscular fatigue, and hyperextension of the hips may be painful but full or excessive. The congenital-defect patient, whose defect is unmixed with other causes, may pass all the tests.

In discussing treatment, Dr. Heald laid stress on the value of extensive lumbar strapping for aponeurotic tear. He showed a patient in whom this method had relieved serious pain of ten years' standing, and in whom it had been replaced by a celastoid belt for permanent wear. The constitutional disease type, he said, benefits from physiotherapeutics and exercises, and its lordosis should be given special attention. The badly toxic patient should be immobilised as for a fracture until the muscles can be restored by rest, regulation, and the removal of foci. The congenital defect can sometimes be removed by operation, but is only too apt to cause further trouble.

[3] Ibid., p. 60.

JESSE BOOT OF NOTTINGHAM.

Lord Trent, who died in Jersey last Saturday, will be chiefly remembered as a Freeman of Nottingham who earned vast wealth and put it to worthy ends. Grandson of an agricultural labourer and son of a herbalist, he was born 81 years ago in Nottingham, and at the age of 13 took control of his father's shop in Goose Gate. Spending his spare time in studying pharmacy he opened 14 years later a chemist's shop in a working-class neighbourhood of Nottingham, which was the forerunner of a retail chemists' undertaking employing 13,000 people. Under his direction the firm of Boots soon began to manufacture their own drugs and were in the position to supply to the troops during the war a hundred millions or more of water-sterilising tablets, while Sir Jesse himself in collaboration with Colonel E. F. Harrison devised the box respirator for which the firm supplied all the chemicals required. On his native city Sir Jesse spent nearly a million pounds, his greatest gift being the new University College at Highfields in which he endowed several scientific chairs. His wife and he also built hostels for students on a lavish scale. To ensure a noble appearance for the East Midland university, which he saw in imagination, he laid out a broad street a mile long bordered with rhododendrons to be named the University Boulevard. His benefactions in his wife's home of Jersey to which he retired were of similar intent and on a like scale. He initiated a scheme for coöperative marketing by Jersey farmers and built schools and workmen's houses. This achievement is the more remarkable when it is remembered that for 30 years he had been completely crippled by myositis ossificans.

ON June 8th Surgeon Rear-Admiral Reginald Bond was received by the King upon his appointment as Medical Director-General of the Navy from July 1st.

SPECIAL ARTICLES

HARVEIAN SOCIETY CENTENARY.

LAST week the Harveian Society of London celebrated the conclusion of its hundredth session by recalling scenes in William Harvey's life and assembling many of those who honour his memory. The celebration opened with the delivery of an oration, published in our columns last week, by Dr. Raymond Crawfurd, on the place of medical societies in the progress of medicine.

EXHIBITION OF RELICS.

Members of the society were entertained to tea on Thursday in the Great Hall of Harvey's hospital, where an attempt had been made to arrange an exhibition of Harveian relics. It must be admitted, however, that in spite of Harvey's long association with St. Bartholomew's practically nothing has survived which can be regarded as having a personal connexion with Harvey himself. The nearest approach is the fine pewter inkstand, given to the hospital by Martin Bond in 1619. This almost certainly was used by Harvey when he attended at the hospital, and it still stands on the table in the Treasurer's office, though a replica has been made for his use. The other treasures in the exhibition dated from the earliest days of the hospital down to the end of the seventeenth century. They included a deed making a grant by Rahere to Hagno in 1137; a deed of covenant signed by Henry VIII. in 1546; and the well-known Cartulary of John Cok, 1456–68. Other manuscripts were the volumes of the hospital ledgers and journals covering Harvey's time, and another of definite Harveian interest was the repertory book, with the plan of the hospital as it was in 1617. Harvey never actually lived in the hospital, but this plan was made during the period of his service, his appointment as physician to the hospital dating from 1609. The hospital silver was also exhibited, the earliest piece, a tall cup with a baluster stem, having been given by "John Jones, Cittizen and Marchant Taylor of London" in 1639. In addition to these relics there were shown reproductions of all the known portraits and busts of Harvey, and an almost complete range of the editions of his three books: *De Motu Cordis*, *De Circulatione Sanguinis*, *De Generatione Animalium*. A few of these were from the St. Bartholomew's College library, but the first edition (1628) of *De Motu Cordis* was lent by the Royal College of Physicians of London, together with the editions of 1639 and 1643. The Royal College also lent the two editions of the *De Venarum Ostiolis* by Fabricius published in 1603 and 1624, the plates in which were the source of the famous engraving in Harvey's work. The first edition of *De Circulatione Sanguinis* was lent by the Royal College of Surgeons, together with the first English translation of *De Generatione* (1653), a copy on fine paper with the engraving by Faithorne. Another fine example of this engraving was lent by Sir D'Arcy Power. It is regarded as probably being the best representation of Harvey in existence. Another book of extraordinary interest was the copy of the first edition of *De Generatione Animalium*, containing notes upon Aristotle in Harvey's own hand on the fly-leaves. This had afterwards belonged to Harvey's brother Eliab, and contains his signature. It was lent to the exhibition by Mr. F. C. Pybus, of Newcastle. Other examples of Harvey's crabbed and difficult handwriting were two brief signed notes. One of these belongs to the hospital; the other was lent by the Wellcome Medical Historical Museum, together with a number of paintings and other objects of interest. Among the books were some very uncommon editions, notably those of *De Motu Cordis*, published at Padua in 1689, and at Bologna in 1697, of each of which only one other copy has been recorded.

BUCKSTON BROWNE DINNER.

A festival dinner was held at the Grocers' Hall on Friday evening when Prince Arthur of Connaught was the principal guest. Sir Thomas Horder, president of the society, who was in the chair, announced the election of Prince Arthur to honorary membership of the society, handing him a gold medal specially struck to commemorate its centenary.

Prince Arthur, in proposing "The Society," spoke of its endeavour to maintain the spirit of Harvey. As chairman of the Middlesex Hospital he was, he said, deeply interested in all that related to the progress of medicine, and he regarded societies like the Harveian as assisting greatly in the expansion of medical science and the development of medical services.

Sir Thomas Horder, in reply, greeted Prince Arthur as a Freeman of the Worshipful Company of Grocers, in whose beautiful hall the feast was being held. Although William Harvey was not a Grocer himself, three of his six merchant brothers belonged to the Company, an association which had no doubt influenced the Master and Wardens in their decision to offer hospitality on this occasion. The Harveian Society, he said, had not departed from the spirit of its eponym. In its presidential chair had sat physicians like Richard Quain, William Broadbent, Hughlings Jackson, Thomas Buzzard, John Williams, James Goodhart, and Malcolm Morris; surgeons like John Erichsen, Henry Thompson, Thomas Bryant, Watson Cheyne, C. B. Lockwood, Henry Power, and his equally distinguished son D'Arcy Power. Harveian lecturers such as Jonathan Hutchinson, Francis Champneys, Buckston Browne, Almroth Wright, StClair Thomson, Arthur Keith, and Berkeley Moynihan had made evident the society's efforts to search out the secrets of nature. It was, he said, difficult for us to speak of William Harvey in moderate language. He was so easily the central figure in our annals and the founder of scientific medicine in this country. As Cæsar appeared to Cassius in relation to the Roman republic, so Harvey appeared to us in relation to British medicine—"He doth bestride the narrow world like a Colossus; and we petty men walk under his huge legs, and peep about to find ourselves dishonourable graves." Harvey had done a much greater thing for medicine than to establish beyond all doubt the physiological principles governing the circulation of the blood. He introduced rational and scientific methods into the chaos of empiricism, speculation, and wild hypothesis. Imagination boggled at the thought of what medicine was before Harvey. A friend of his, speaking of to-night's engagement, had said "Harvey? that was the man who discovered the circulation of the blood, wasn't it?" adding, after a pause, "I think they really must have known about it before." A few days ago, Sir Thomas went on, he had joined in a search for those caves in the garden at Coombe Lodge, Croydon, where, said Aubrey, Harvey was wont to sit and meditate. He did not find them, but was

able, nevertheless, to capture something of the Harvey atmosphere in the old garden where Dr. George Ent had sought out Harvey and induced him reluctantly to part with his book *De Generatio Animalium*. He concluded by thanking Prince Arthur for his good wishes and assuring him that the society would strive to justify the distinction which his name had given to its roll.

Sir StClair Thomson, as an honorary member and one of nearly 40 years' standing, bade the guests welcome. He quoted a saying about Sir Astley Cooper that he had passed "through the hearts of the poor into the pockets of the rich," adapting it to apply to Prince Arthur who, as treasurer of the Middlesex, had passed "through the pockets of the rich into the hearts of the poor." Prof. W. H. Welch replied for the Harveian Society of New York as one who occupied the chair of medical history at Harvard. "Permit me to say," he kindly remarked, "you do these things extremely well." He described the effect of anniversary celebrations of this kind in stimulating the advancement of medical knowledge. Lord Dawson, who also replied, spoke with feeling of the ties of medical comradeship. In no other field, he said, do we work in such harmony. Dr. D. Elliot Dickson, representing the Harveian Society of Edinburgh, was induced to tell a story.

The guests included Dr. R. A. Young (President of the Medical Society of London), Dr. Raymond Crawfurd, the Archdeacon of London, Sir Farquhar Buzzard, the Master of the Apothecaries, Prof. W. Blair Bell (President of the British College of Obstetricians and Gynæcologists), Sir Arthur Gaskell, the Master of Caius College, Sir Dudley Ridout, and Dr. H. B. Brackenbury.

PILGRIMAGE TO HEMSTEAD.

The centenary celebrations ended auspiciously in a summer day's pilgrimage on Saturday to Hempstead Church where William Harvey and many of his family are buried "lapt in lead" in the Harvey Chapel. His remains were transferred in 1883 from the vault beneath the church, at the charge of the Royal College of Physicians. The journey was made by road and the party, which included a large number of ladies, was received by the vicar, the Rev. Conyers Barker, at the church where a short service was held, the address being given by the Right Rev. T. A. Chapman, D.D., Bishop of Colchester, and a collection was taken in aid of the fund for rehanging the bells when the new tower is built to replace the one that collapsed in 1882. Sir Thomas Horder then offered, on behalf of the Harveian Society, a silver paten, which was received and consecrated to the use of the church. The party inspected the Harvey relics contained in the church and its vault, and took luncheon in the vicarage garden. The members then proceeded to Rolls Park, Chigwell, near Loughton, where they were received by Lady Francis Lloyd, and Sir D'Arcy Power gave a short account of William Harvey in his family relationships.

CONTRIBUTORY SCHEMES AND PUBLIC ASSISTANCE. The Leeds public assistance committee has adopted a scheme for providing hospital treatment for the contributors to the Leeds workpeople's hospital fund and their dependants. A payment of twopence per week will entitle the beneficiaries to treatment at the hospitals of the public assistance committee or at the public dispensary and nursing societies of the city. The workpeople's fund will pay to the Leeds corporation £1 5s. for each in-patient within the city—tuberculous, mental, chronic, maternity, and notifiable diseases cases excluded. The full rate of maintenance and treatment will be paid for patients outside the city area.

ROYAL INSTITUTE OF PUBLIC HEALTH.

ANNUAL CONGRESS AT FRANKFORT-ON-MAINE.

THIS congress was held from May 19th to 24th. From Frankfort opportunity was taken to visit the spas of Nauheim, Homburg, Wiesbaden, Kreuznach, and Munster a. St., and on the outward journey most of the visitors called at Aachen to see the Quellenhof and the Landesbad with its baths for insured patients. The sessions of the congress were held in the lecture rooms at the Städtisches Krankenhaus, a hospital of some 3000 beds. Of the numerous papers read at the six sections only a few notes can be given here.

Section of State Medicine.

DIABETES.

Dr. G. SINGER (Vienna) said that the increase in the extent of diabetes and the peculiar difficulties of dealing with this disease have brought it within the sphere of public health activity in Vienna. The discrepancy between our considerable scientific knowledge of the disease and the results of treatment are most marked in the age-group 25–55, the most productive years of man's life. In Vienna a welfare centre has been set up confined to the very poor; it has been so successful that doctors are anxious to send both private and insured patients to the centre. In 1930 2000 patients attended; those requiring hospital treatment were recommended to go to hospital; the bulk were dealt with at the centre. The installation of special kitchens for diabetes is an important advance. Dr. Singer considers that many diabetics can be efficiently treated and more cheaply without insulin.

Dr. L. R. GROTE (Frankfort) pointed out that in the German public hospitals the number of patients admitted for diabetes had increased by 80 per cent. from 1924 to 1927; the increase is due to treatment by insulin and to the diminution of the mortality in children which can now be reduced to nil. The treatment of diabetics is usually extended over too long a period; they ought to be treated intensively either in a special clinic or in a special division of a hospital. In the Carl von Noorden Clinic at Frankfort, the severest cases are made fit for work in about 18 days. Subsequent treatment and advice could well be given at special welfare centres. Dr. Grote also advocated the institution of homes for diabetic children where they would be instructed on diet.

CANCER.

Herr GRUNEISEN, general secretary of the German Society for Combating Cancer, pointed out that owing to better methods of treatment in the last 20 years there had been a lessening of mortality from cancer during the middle period of life. For the diagnosis and treatment of cancer centres should be established in connexion with university clinics and the large hospitals. A concentration of all the cases of cancer in such centres is not desirable or necessary; the cost of the apparatus and the difficult X ray and radium technique, however, compel a certain amount of concentration. An important duty of the cancer centres would be the following up of all patients treated for at least five years. No effort must be spared to prevent sufferers being treated by quacks.

VENEREAL DISEASES.

Dr. ROESCHMANN, general secretary of the German Society for Combating Venereal Disease, gave an account of the working of the law relating to the prevention of venereal disease passed by the Reichstag in 1927. This requires that anyone knowingly suffering from venereal disease or having reasonable cause to believe themselves to be infected must submit themselves to medical treatment by a qualified

medical practitioner. Parents and guardians must similarly see that children under their care so suffering are treated. The competent sanitary authority may require persons whom they have reason to believe are suffering from and disseminating venereal disease to produce a medical certificate as to their health. Persons suffering from and suspected of disseminating venereal disease may be subjected to curative treatment and may be detained in a hospital if such detention appears to be necessary to check the spread of the disease. Medical treatment involving serious danger to life shall only be undertaken with the consent of the patient. Any person cohabiting while knowingly suffering from contagious venereal disease or having reasonable cause to believe himself infected shall be liable to imprisonment; a similar penalty can be enforced if any such person marries without informing the other party to the marriage of such infection. Only qualified medical practitioners may treat venereal diseases and diseases of the genital organs; the treatment given must be more or less orthodox. This section also requires examination of the patient by the doctor; there must be no treatment by correspondence (absentee treatment). The giving of advice by lectures and so forth on self-treatment is also prohibited. Anyone who medically examines or treats a patient with venereal disease must inform him of the nature of the disease and the danger of spread and give him a copy of the official memorandum on the danger of venereal disease. Any patient under observation or treatment who fails to attend or who in consequence of his occupation or other circumstances is especially dangerous to other persons must be notified by the doctor in attendance to the sanitary authority. Secrecy is ensured by the infliction of a legal penalty on any employee of a sanitary authority or venereal disease centre who discloses information acquired in the course of his duty as to the existence of venereal disease in any person or its source. Such disclosure may, however, be made by a medical practitioner in the service of the sanitary authority or venereal disease centre or with the consent of such medical practitioner to a public authority or to any person who is entitled to such information in the interests of his own health. The advertising or recommending to the laity of any drugs or treatment for venereal diseases is forbidden under a penalty. The Government may test drugs intended for use as preventives of venereal disease and, if necessary, may stop their sale. Regulations may also be made as to the display, advertising, and recommendation of any approved drug. The law also deals with the prevention of spread to or by babies and children.

In the course of discussion Dr. Roeschmann said that in Germany brothels were being gradually closed. He thought that accosting could be controlled by the police; this had been effected in Hamburg where, shortly after the war, it became so intolerable that the public complained, also in Carlsruhe where the Minister concerned had investigated the matter personally and ordered the police to take action.

CRIMINAL ABORTION.

Dr. V. BORLAND and Councillor BENNETT (Bethnal Green) in a joint paper stated that the traffic in "female remedies" is very considerable: practically every pharmaceutical chemist stocked one or other of these preparations as a regular line: they were even more prominently displayed by the herbalist and "hygienic store." An ergotin and aloes compound pill sold virtually to secure abortion could be freely obtained from any wholesale patent medicine house: the cost was high—2*s.* 6*d.*, 3*s.* 6*d.*, or even more a box. "Orange pills," in regular demand in the East End of London, were sold by unqualified drug stores at 1*s.* for six pills; they contained aloes, liquorice, and colocynth, and are no more than a strong laxative. These fraudulent preparations are sold to women who are in a state of the direst poverty. During 1930 66 cases of abortion occurred in Bethnal Green: five of the women died. Nineteen deaths from childbirth occurred in the last two years, seven of these being due to septicæmia following abortion. The taking of pills and drugs was definitely ascertained in two cases; in three other cases there was reason to suspect instrumental interference.

SCOLIOSIS.

Mr. G. R. GIRDLESTONE (Oxford), in an account of the English orthopædic schemes, referred to the insidiousness of scoliosis which when once established cannot be completely cured and which is often progressive throughout childhood and again after middle life, yet no parent is prepared to take a child to a distant hospital even once for a defect which is so intangible until well established; only when there is an orthopædic clinic nearby with its consequent automatic instruction of the mothers in the vicinity will such defects, easily cured in their early stages by remedial exercises, be prevented.

DISINFECTION.

Dr. ROSENHAUPT (Mainz) regretted that the disinfestation of dwellings by hydrocyanic gas liberated from zyklon was not allowed in Germany; its use is permitted in Scandinavia, Austria, and Hungary. In Germany, however, zyklon may be used for premises other than occupied dwellings. He described a hydrocyanic gas chamber which can be charged and emptied without anyone having to enter it. For the disinfestation of dwellings he recommended the use of diametan, a mixture of sulphur with an oxidising agent; this liberates sulphur trioxide at high pressure.

Section of Industrial Hygiene.

ENGINEERING RISKS.

Dr. A. MASSEY (Coventry), dealing with the health of workers in the engineering industry, said that some 50,000 persons in the city of Coventry were engaged in the engineering trades. The health of workers in an industry depends not a little on the health of the industry itself; good trade means regular employment, decent earnings, and relief from mental anxiety attendant upon economic stress. Home conditions are of basic importance; it is very little use to work in a hygienic factory if the worker has to live in a slum. Many engineering processes tend to eliminate the physical misfits at an early stage; at a later stage there is also a selective transfer from engineering to other vocations when advancing age finds engineering too exacting; the proportion of workers over 50 years of age in this trade is considerably less than that of workers in all occupations collectively. In engineering shops heat is often a detrimental factor; this has to be countered by the cooling powers of adequate ventilation. The dangers to health from sand-blasting, the process used for cleaning the surfaces of castings and heat-treated machine details by impinging sand under high pressure, are somewhat difficult to counter. Some of the fine particles of silica penetrate the fabric of the helmet or gain access under the cape attachment; although the maintenance of a positive air pressure inside the helmet is of service, the use of shot instead of sand should be considered; the shot do not fracture or become pulverised. Even then the danger from silica is not entirely removed; the rough castings before treatment are coated with sand burnt on during the moulding; shot-blasting breaks off these particles producing a fine silica dust which must be guarded against. Respirators are unfortunately not ordinarily employed during the sieving of used mould sand. Chromium plating has been increasingly used of late to render bright motor-car and cycle fittings untarnishable. The worker is very apt to inhale chromic acid fumes; the respirators supplied are often only used when the men are under direct supervision. In cellulose spraying the emanations in the spraying chamber and its immediate vicinity are very pungent; they contain certain benzene derivatives which are occasionally the source of

benzene poisoning and at times include amyl nitrite as a decomposition product; the inhalation of this substance may conceivably bring about cardio-vascular changes. Oil dermatitis and boils cause much trouble among operators of turret and automatic machines; for cooling these during metal-cutting operations large quantities of a special expensive oil are used. It is used over and over again and soon swarms with micro-organisms especially streptococci; other impurities and metallic particles are present. The addition of a bactericidal fluid miscible with oil serves to prevent boils, but oil dermatitis caused by the action of the metallic particles and other impurities continues to be not uncommon.

Dr. H. L. GARSON (Port Sunlight) set out his nine years' experience of the medical examination of employees at a food factory employing some 500 workpeople. The employees are examined before being accepted for work; in order to be certain of excluding workers with septic cuts or sores on the hands and arms it is made a condition of employment that the employees shall submit to re-examination if so required. Of 475 girls examined between the ages of 14 and 18, 54 were rejected; 49 of these owing to lack of personal cleanliness, but only 5 on account of physical defect. Any defects found in those passed as fit for work are noted and treatment secured; girls under 18 who have dental caries or a defect of vision must submit to treatment. Smaller employers by combining among themselves could do much to reduce the cost of medical treatment, some of which can be given under the panel system. In answer to a question Dr. Garson stated that during nine years' work in the food factory he had not come across a single case of enteric fever or dysentery among the employees.

MOUNTAIN SICKNESS.

Prof. KOELSCH (Munich) addressed visitors to mountainous resorts. He considers that when climbing mountains, possibly carrying a load—in other words, a rücksack—persons especially sensitive may be attacked by mountain sickness even at a height of 1000 to 2000 metres. When the ascent is passive—i.e., riding a horse or mule or by mountain railway—the critical altitude is about 3000 metres. The rapidity with which height is attained comes into play; the longer the time taken the longer have the body mechanisms to accommodate themselves to the altered conditions. The Austrian Zugspitze railway takes only 20 minutes to ascend about 1900 metres, whereas the Bavarian electric railway requires an hour to reach the same altitude. The authorities of mountain railways going up to great heights should be required to put up a notice at the starting station giving advice to elderly and delicate persons, especially to invalids with heart or lung complaints or with high blood pressure, marked anæmia, and possibly ear troubles. Notices should also be posted in the carriages and at the various stations advising passengers, especially elderly and delicate persons, on alighting to rest in order to become acclimatised. It is also advisable that the rate of ascent should be fixed at 20–30 mins. per 1000 metres difference in altitude. An acclimatisation station between the second and third part of the journey would be useful: persons feeling discomfort on the way up could alight in time.

EXHAUST GASES.

Prof. GROSS (Ludwigshafen) did his best to dispel any fear of the danger of exhaust gases from motor traffic in streets. He found that when the engines are running at full speed the exhaust gases contain only a small percentage of carbon monoxide, 0·1 per cent. by volume as opposed to 6·8 per cent. when running light; similarly unburnt motor spirit is much more abundant when the engine is running light. But much dilution of the exhaust gases occurs even at a distance of one metre from the car; with increase of the velocity of the motor-car further dilution takes place. In a car standing still there was 3 per cent. of carbon monoxide in the exhaust and less than 0·1 per cent. at a distance of a metre. Travelling at the rate of 10 kilometres an hour there was 6·5 per cent. of carbon monoxide in the exhaust and less than 0·1 per cent. at a distance of one metre; when the speed was increased to 20 kilometres there was 9·6 per cent. of carbon monoxide in the exhaust and less than 0·1 per cent. at the distance of one metre. No danger is to be apprehended from the air in well-ventilated tunnels; in the tunnel under the Elbe at Hamburg, which is provided with adequate natural ventilation, the percentage of carbon monoxide was found to vary from 0·005 to 0·023. The results of 101 analyses of air collected in streets mostly during rush hours under varying conditions of temperature and meteorological conditions at the level of the head of a policeman on six occasions only gave a percentage exceeding 0·015, the highest being 0·023; the air examined at the same spot a few minutes later contained far less carbon monoxide. Seeing that danger only arises from breathing 0·02 per cent. of the gas for several hours even persons stationed on duty in streets run no danger of carbon monoxide poisoning. There is also no danger from unburnt motor spirit in the exhaust gases liberated in the streets; experiments on animals showed that 10 to 15 times the amount present in exhaust gases must be reached before such unburnt spirit could cause trouble.

Section of Women and Children.

Prof. GROTJAHN (Berlin) pointed out that in the last decade the birth-rate has fallen to 16 per 1000 in England and 18 in Germany; half of what it has been. Unless steps are taken the birth-rate will fall further. States which depend on commerce and industry require a certain density of population and must guard against dwindling. A diminution must occur if families are to consist of two children only; for maintenance of the number each family must have on the average three children, and as this will not occur in each individual family it is essential for the State that there should be many families with more than three children. Dr. Grotjahn considers that the time has come for an appeal to parents to beget children; the burden should be adjusted by making family allowances to those drawing regular wages and by compulsory insurance for parenthood for others.

Prof. E. SCHLESINGER (Frankfort) said that during the last few months a retrogression had occurred in the state of nutrition of the children of the working classes. Too little milk and milk foods were consumed and in the winter months too little vegetables; the cheaper kinds of meat and sausages were being used. Very valuable is the milk breakfast with its 260 calories and the dinner with its 500-600 calories and abundant vegetables provided by the schools.

Section of Tuberculosis.

THE GERSON DIET.

Discussion on the influence of diet on tuberculosis was stimulated by the presence of Dr. Gerson, one of the originators of the salt-free diet. Opinion among those present was, on the whole, averse to its use—at least, for cases of pulmonary tuberculosis. Dr. G. SCHRÖDER (Schömberg) considered such a diet dangerous to some patients. Dr. O. AMREIN (Arosa) held that patients treated for tuberculosis could not all be given the same diet; differences in national dietaries stood in the way. Although he had seen astonishing results obtained by Prof. Sauerbruch at Munich in cases of surgical tuberculosis, and especially in patients with lupus given a salt-free diet, he had given it up himself in pulmonary tuberculosis. Prof. L. BRAUER (Hamburg) had caused consecutive patients admitted to his institution to be sent alternately to one pavilion when they were given salt-free diet, and to another when they were given the ordinary full diet; no difference could be detected in the results. Prof. F. VOLHARD (Frankfort)

explained that in the treatment of pulmonary tuberculosis by a salt-free diet Gerson holds that the diet should be largely vegetarian with but little meat, and the body should be saturated with vitamins, whereas Herrmannsdorfer allows food rich in protein and not so restricted as to meat. Both have prescribed a so-called "Mineralogen," a mixture of calcium salts and phosphorus with cod-liver oil; this is, however, apparently no longer considered an essential part of the treatment. Common to both diets is the increasing restriction of sodium chloride. Although he had found no benefit to tuberculous patients by giving them a salt-free diet he was certain that such a diet was of benefit to patients suffering from other diseases. The salt in the food should be limited so that the chloride excretion in 24 hours does not exceed 1 g. The kidneys are saved work, the quantity of circulating blood is lessened; blood pressure often falls, and attacks of angina pectoris cease.

EARLY SIGNS.

Dr. J. STRASBURGER (Frankfort) reported that examinations of contacts with tuberculous patients carried out at the University polyclinic at Frankfort, in which X rays had been largely employed, showed that in 2·6 per cent. there was a manifest lesion of the lungs. All these contacts were apparently healthy and would not have sought medical advice. Control examinations of about 1400 students and nurses resulted in the discovery of only one case of tuberculosis. The form taken by the disease in the contacts was the *Früh-infiltrat*, which usually can only be detected by X ray examination.

Dr. J. RENNIE (Sheffield) emphasised the importance of dealing with cases of pulmonary tuberculosis before they became sputum-positive. In Birmingham, London, and Sheffield a rough comparison of the percentage of sputum-negative cases treated in sanatoriums is 30·3, 20·5, and 81·7 respectively; these figures indicate that in Sheffield for every infectious case of pulmonary tuberculosis treated in sanatorium four non-infectious cases are so treated. The position to-day is that no physician can guarantee a complete cure to an infectious case of pulmonary tuberculosis however localised the initial lesions may be. Of 7231 sputum-positive cases recorded in Sheffield since 1911, 80·4 per cent. have died of pulmonary tuberculosis; 2 per cent. have died of other causes. In no area can the death-rate be appreciably lowered by curing infectious cases of pulmonary tuberculosis; to effect this it is necessary to diagnose and treat the disease before the sputum-positive stage. He holds that where definite infiltration is shown by radiographic examination physical signs are present. Whether such patients are in the active stage of the disease or not can only be determined by admitting them for observation.

COLLIERS AND SILICOSIS.

Prof. S. LYLE CUMMINS (Cardiff), speaking on coal-miners and tuberculosis, said that coal-miners, although so constantly exposed to the inhalation of both coal dust and stone dust, are notoriously less liable to pulmonary tuberculosis than the rest of the adult male population in Great Britain. There is, however, a high death-rate of colliers from bronchitis. A large proportion of elderly coal-miners are affected with a degree of silicosis which though not sufficient to prevent them from working is sufficiently advanced to give rise to the radiological appearances characteristic of lung fibrosis; such men tend to be short of breath on exertion and are liable to have a cough and bring up rather copious sputum, often black in colour; they are also subject to fairly frequent attacks of catarrh. Apart from the stone dust used to prevent explosions there is also present in the air of coal-mines stone dust from the ripping of the roof, the repairing of the walls and road, and from the coal face when the seam has to be reached by drilling "hard headings." Prof. Cummins believes that fine particles of silica are taken up by alveolar phagocytes and carried into the intercellular spaces of the alveolar walls. Thence the dust-laden cells enter the lymphatic vessels; the silica particles undergo slow solution and the silica sol thus produced causes a fibrosis to be set up. The dust cells agglutinate in the lymph channels obstructing the circulation, ultimately causing local stasis; around these accumulations of cells fibrosis also occurs. The presence of coal dust in the lungs of experimental animals has been found to have a definite protective effect against tuberculosis; its anti-tuberculous properties may depend upon its well-known powers as an adsorptive agent.

MEDICINE AND THE LAW.

Coöperative Drug-supply: Unsuccessful Action against the Minister of Health.

THE difficulty of obtaining any remedy against a Minister of the Crown was shown last month by an unsuccessful action against the Minister of Health. The third schedule of the Medical Benefit Regulations governs the supply of drugs and appliances under the national health insurance system; its provisions are part of the terms of service agreed a few years ago with representatives of the pharmacists. If the Attorney-General is correctly reported, he stated that "it was understood or agreed that the terms should apply for a period of six years." In the schedule it is stipulated that no chemist shall give or offer to any person any gift or reward "whether by way of a share of or dividend on the profits of the business or by way of discount or rebate or otherwise" as an inducement towards, or in consideration of, such person presenting an order for drugs or appliances on a prescription form under the regulations. It is easy to imagine the kind of abuse at which the stipulation was aimed. But the result was to make a coöperative society unable to pay dividends on health insurance prescriptions dispensed in coöperative drug stores. The societies not being entirely devoid of influence, the Minister of Health proposed to cancel the obnoxious stipulation. The proposed change affected the prospects of some 10,000 retail pharmacists throughout the country who objected to the deletion. They applied to the Chancery Division for a declaration that the Minister was not entitled thus to alter the terms of their contracts with the insurance committees, and for an injunction to restrain him from carrying out his intention. The Minister, of course, has large powers of making and altering regulations under the National Health Insurance Acts, but the plaintiffs argued that his present proposal was not a bona-fide exercise of such powers. Appearing on behalf of the Minister, the Attorney-General contended that the plaintiffs' action was misconceived, that it disclosed no consideration for the alleged agreement, and that the bargain was legally invalid. He applied to strike out the claim on the ground that it did not disclose any reasonable cause of action; the proper remedy, if any, was by way of petition of right. The court agreed; it would be a waste of time and money for the plaintiffs to continue their action in the present form; the action was therefore dismissed with costs.

The Crown is notoriously a well-equipped and relentless opponent. The almost archaic procedure by petition of right, which the Pharmacists' Union has now been told is its only method of attack, is something of a scandal. It is slow and costly. The legal advisers of the Crown can hamper the petitioners

at every turn. The petition cannot be set down for trial until it obtains the "fiat" of the Crown ("that right be done"); the granting of the "fiat" is an act of grace. In several ways the rights of an ordinary plaintiff disappear when the Crown is defendant. The Crown can obtain discovery of documents in support of its case; the petitioner has no such right against the Crown. In other respects (counter-claim, pleading, and amendment) the Crown enjoys technical privileges which have long ceased to exist as between ordinary litigants. The unfairness of the procedure against government departments was fully illustrated in the years following the termination of the war. The experience led to the setting up of a Crown Proceedings Committee; but there were unaccountable delays in its deliberations, and ultimately Lord Haldane bade it formulate legislation on the express assumption that reform was essential. Some years after the committee was set up it produced a well-drafted bill to make sweeping changes. The ancient principle that the King could do no wrong (originally, perhaps, based on the difficulty of suing the King in his own courts) was to be abolished, as has already been done in the Dominions overseas. The Crown could then be sued in damages if the servants of the Crown were guilty of negligence or other misconduct. Nothing, however, has been done to carry out the committee's proposals, though both branches of the legal profession have publicly demanded that this reproach to English justice should be removed. At least one eminent judicial authority has attacked the evils of bureaucracy. Here is an evil with the cure ready to hand. The law is amply represented in both Houses of Parliament. Its representatives would serve their country well by pressing for the consideration of the Crown Proceedings Bill. If in the present instance the retail pharmacists have no valid legal grievance against the Minister, it should be possible to establish the fact without recourse to procedure which expert opinion condemns as unfair.

THE SCOTTISH CENSUS OF 1931.

(FROM OUR EDINBURGH CORRESPONDENT.)

In answer to a question in the House the Secretary of State for Scotland has issued the provisional summaries of the recent Scottish census. The population of Scotland shows a fall from 4,882,497 in 1921 to 4,842,554 in 1931; a decline of 39,943, or 0·8 per cent. At the last census the increase of population was trifling, and the present decrease is hardly a surprise. The causes cannot be fully analysed until the detailed returns appear, but at least some of the causes are easily guessed. The census of 1921 had, on account of the coal strike of that year, to be taken in June instead of in April. This affected the local populations and made some confusion for the administrative bodies, especially those of the small summer holiday resorts; but this could not touch seriously the total for Scotland. Two main causes of the decline are suggested: the drift of industry southwards to England, a theory that cannot be verified until the English figures are ready, and the falling birth-rate, which is true of Scotland as of England. Emigration was mounting in the early days of the decade, but it has recently fallen materially. This should count towards an increase of the population, and yet the population has fallen.

TOWNS AND RURAL AREAS.

The 24 towns over 20,000 at last census show a net increase of 65,810; 15 of them show an increase of 84,818, but 9 of them (coal, iron, and shipping) show a decrease of 18,908. Glasgow has increased by 36,890, or 3·5 per cent., now standing at 1,088,417; Edinburgh by 18,734, or 4·5 per cent., now standing at 438,998. The two cities of Dundee and Aberdeen show increases of 7268, or 4·3 per cent., and 8298, or 5·2 per cent. respectively.

Of the rural areas, some show very serious decreases. Argyllshire declined from 78,862 to 63,014, or 18 per cent., but this was, at least in part due to the "holiday" factor. Bute, another "holiday" area, fell from 33,711 to 18,822, or 44 per cent. In both these extreme cases, however, there was probably a more fundamental drift from the "land" to the town. Caithness, an agricultural and fishing county, fell by 2629, or 9·3 per cent. Ross and Cromarty, which includes the island of Lewis, fell by 8016, or 11·3 per cent. This is almost entirely an agricultural, fishing, and sheep county. The biggest decline in a purely rural county, except Argyll, is shown in Wigtownshire, which fell by 1484, or 4·8 per cent. Of the northern island groups, the county of Orkney shows a decline of 2036, or 8·4 per cent., and Shetland, 4110, or 16·1 per cent. The populations of these two are now 22,075 and 21,410 respectively.

As to sex, males declined from 2,347,642 in 1921 to 2,325,867, a fall of 21,775; females, from 2,534,855 to 2,516,687, a fall of 18,168. In 1921 the excess of females was 187,213; it is now 190,820. It will be interesting to see how the transfer of industry affects men and women and whether the decline in the birth-rate is due, in any material proportion, to a decline in the marriage-rate.

EFFECTS OF DEPRESSION IN INDUSTRY.

In no previous census have the effects of industrial depression been so manifest, whether we look to Shetland, in the extreme north, or to the industrial belt of the midlands, which holds about three-fourths of the Scottish population, or to the agricultural areas of marginal counties of the highlands and lowlands. But the analysis of these redistributions, which are so obvious in a small nation like Scotland, must await the completed returns and then we shall be enabled to judge whether a trifling decrease of 40,000 in some four and three-quarter millions is any indication of vital decadence or only represents a passing phase of industry.

GILGAL HOSPITAL, PERTH.

This hospital has been designed and erected by the directors of James Murray's Royal Asylum, Perth, to meet a special need. It became apparent during recent years that more accommodation of the hospital type for acute and recent cases and those requiring medical and nursing treatment was required, and after consideration of the various possible means of expansion it was decided to erect a self-contained hospital block of 40 beds on an adjacent site. This building is intended to be reserved solely for voluntary patients and especially for those whose standard of behaviour and habits is high, whose malady is slight or of short duration, who are sensitive and fully appreciative of their surroundings and company, and who may be apprehensive of possibly harmful or painful contacts with invalids of a more confirmed or different type.

The property named Gilgal, on which the new

View of the hospital.

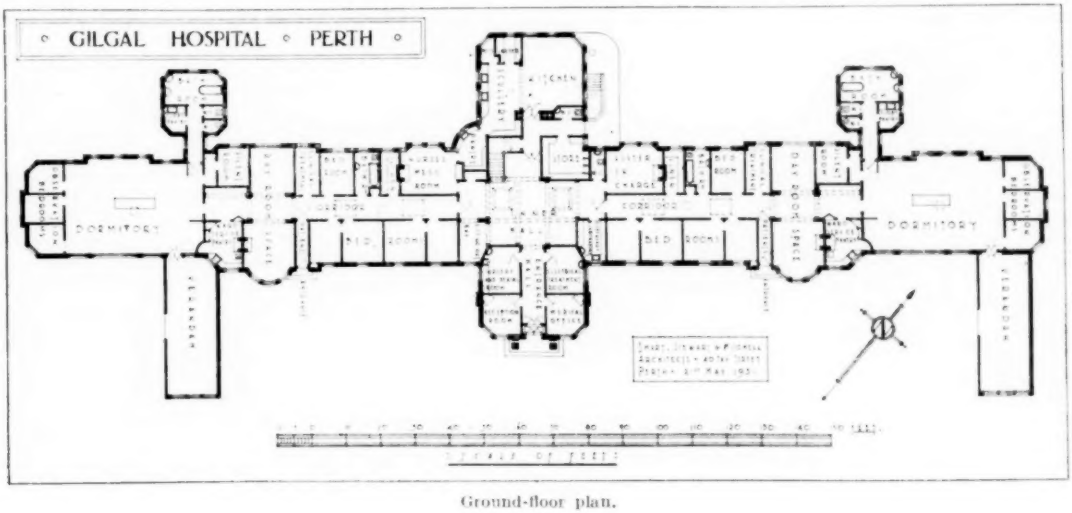
hospital has been built, extends to about ten acres. It is situated on the slopes of Kinnoull Hill about 200 feet above sea level, and is about one mile from Perth, on the east side of the river. The private rooms, verandahs, and garden face south and west, and it commands to the north a magnificent view of the valley of the Tay and the mountains beyond.

The hospital consists of two wards and a central admission block. The latter contains on the ground floor a medical office, reception room, surgery and dental room, electrical treatment room, dispensary and laboratory, and office of matron, all connecting with the main entrance hall. At the back are the kitchen and store, nurses' mess room, and service pantry. On the first floor of the central block are the staff quarters, including detached rooms for night nurses and in the basement, with access only from outside, is the central heating and domestic hot water plant. Under the entrance hall is the meter room and a compartment for luggage. The surgery and dental room is fitted for minor surgery, surgical examinations, and for dental treatment. It contains a gas-fed sterilizer, wash-hand basins and sinks, a dental chair, and instruments for emergency surgery. The electrical treatment room contains an ultra-violet projector, radiant heat lamps, and apparatus for faradic, galvanic, and Schnee baths. The laboratory is fully equipped for investigation of the body fluids.

The hospital is a self-contained unit and all cooking is done by gas, the plant consisting of two Falcon ovens, a Richmond boiler, a Main grill and toaster, and a Main hot closet. The total consumption when the hospital is nearly full is expected to be 50,000 to 60,000 cubic feet of gas per month. Oil-fuel is used for both the central heating and the supply of domestic hot water. The plant for the former consists of two (one being a reserve) Britannia boilers fired by Oil-O-Matic burners. The latter is a Rapid-Heater fired by a similar but smaller unit. All the burners are entirely automatic in action. The oil tank (which is filled from outside the building) has a capacity of 1000 gallons of oil (4 tons), being about 21 days' supply in cold weather.

Heating of the rooms is by the Panel system, designed by Messrs. G. N. Haden and Sons. The heating elements on the ground floor consist, not of the usual type of exposed radiator, but of grids or panels of high-grade steel tubing of half-inch bore, which are attached to the lower edges of the rafters in the ceilings and being buried in the plaster are invisible. For large bedrooms as much as 120 ft. of tubing is used in one panel and for dormitories, corridors, &c., a series of panels is employed. All joints are welded and each section is tested to withstand 300 lb. pressure. Each panel is fed by a buried pipe which can be controlled in the same way as a radiator. The advantages of this heating system are the absence of cumbrous radiators, the avoidance of convection air currents and dust, with its disastrous effect on decorations, the high proportion of radiant heat, and the much slighter drying effect on the air. Owing to the narrow channels the water must circulate in, a half h.p. electric Rotary Impeller pump is inserted in the return main, near the boiler. On the first floor, heating is by the usual Ideal radiators in each room and corridor.

Each ward unit consists of a dormitory (8–11 beds), a day-room or lounge and dining-room, six private bedrooms, three observation private bedrooms, two bathrooms, a clinical treatment room, a service pantry, a verandah, three w.c.'s, a slops room, linen store and cupboards. The dormitory and corridor have controllable ceiling extractor ventilators, and all the rooms have controllable Ewart's ventilators in outer wall and fixed openings to the



Ground-floor plan.

corridor, &c. The south side of each dormitory consists of three sheets of glass, one 72 in. × 152 in. and two 72 in. × 72 in., with controlled opening. The verandah, 40 ft. by 16 ft. will accommodate eight beds, and faces south-west, the end being enclosed by glass. It is so arranged that a nurse working in the service pantry or the dormitory has a full view of all its area. The dormitory can also be observed from the pantry by day or night.

The main bathroom contains a Shanks porcelain continuous bath with thermostatic control in addition to usual equipment. The pantry contains a hot-closet and two gas-burners, by Main. All w.c. doors are fitted with a light bolt and have a strong handle grip on the outside. The floors throughout are of oak, the doors and other fittings of Lagos mahogany, and all metal parts are chromium plated.

The building is protected against fire by two outdoor hydrants on the water main, a Norsen automatic hose-reel in the centre, and by a system of automatic electric fire alarms having 23 sensitive points, situated in the attics, connected to an alarm bell and indicator in the entrance hall.

The cost of the new hospital, including all new roads, fees, laying out of grounds, &c., is approximately £21,500 and the cost of furnishing and equipment is £2800, making a total finished cost per bed of just over £600.

PANEL AND CONTRACT PRACTICE

Medical Certification.

WE published last week without comment a summary of Memorandum 329/I.G. issued by the Ministry of Health. While it may not be easy to realise at a glance the whole significance of the tables it contained, the figures are eloquent enough in proof that medical certification has not been an efficient check on claims for sickness benefit. The reader of the memorandum is forced to the conclusion that persons not entitled to sickness benefit, because they were not actually incapable of work, have nevertheless received such benefit. It is natural enough that persons with trivial illnesses should swell the number of claims, and it might be held wise to encourage such patients to cease work. Many minor ailments would thus be prevented from developing into disabling conditions; in certain short but acute illnesses complete rest in bed for a week may prevent permanent damage. Apart from such passing indisposition the other group of claims which shows the highest rate of increase is that of married women, in many of whom there may be good and sufficient reason for the demand. Childbearing under present-day conditions, as the Ingleby lecturer has just pointed out, does induce a lowered standard of health, and one well-recognised branch of social service is to provide mothers' helps to meet this need. On the other hand, some of these claims may be due to the acquisitive habits of women with growing families.

No attempt is made in the memorandum to give a lead to practitioners as to the standard they are expected to adopt in estimating capacity for work. They must resist the importunities of the benefit seeker, but to do this they must be on the sure ground afforded by a thorough and complete examination. How difficult such an examination may be is well known to every practitioner. When one considers the traditional obstinacy of insured persons, their reluctance to submit to examination, and the difficulty of finding time in a busy surgery for comprehensive work, it is not surprising that the number of claims should increase. It may well be that not enough weight has been given in the memorandum to the change in the attitude of the insured population towards the insurance principle and to the increasing willingness at the present time to get something for nothing. The catch phrases of political controversy have come home to roost, and the cumulative effect of the caption "ninepence for fourpence" is difficult to estimate. Of actual malingering on the part of insured persons there is little evidence. That is admitted on both sides. But there is a lamentable misunderstanding of the nature of the benefits and the conditions necessary to become eligible for them. The objective of the memorandum presumably is the enlightening and education of the practitioner, and who, it may be asked, will undertake a like task for the insured person? Where carelessness can be demonstrated the medical profession has already shown its willingness to apply disciplinary measures. We reported last week at some length proceedings before the General Medical Council in several cases of alleged laxity of certification. In this respect the Scottish Board of Health seems to have stolen a march on the Ministry in Whitehall. But the medical profession will scan the horizon carefully for any evidence of similar action on the part of those who claim to represent the insured persons. It is imperative that they should not be misled by the agents of societies into an exaggerated belief in their right to benefit for sickness or disablement. The warning of the Ministry contained in the circular quoted in this column last week has not come too soon.

Essex Public Medical Service.

Dr. C. H. Panting presided at the annual meeting of the service held in London on June 11th. Continued progress, he said, had been made in all directions in spite of the prevailing depression and unemployment in certain parts of the county. The total number of subscribers on the books at the end of last December, after deducting cancellations, removals, and deaths, was 18,533—an increase over the previous year of 1783. Medical members showed an increase of 12 after deducting deaths and removals. The advantages the service had to offer to general practitioners should, he thought, be more widely known. The total amount paid out to doctor members during the year was £9533 18*s.* 1*d.*, the largest totals collected for individual doctors in each class of district being :—

	Total.		Total.
Urban	£808	Semi-rural ..	£251
Metropolitan ..	£398	Rural	£318

The service may help practitioners in taking over unremunerative clubs. Last year a new member in a rural area decided to transfer to the service en bloc a club which had been run for generations by the firm of doctors to which he had succeeded. The transfer was accomplished and the member found his income increased by about £100 a year. The excellent work of the paid collectors of the service is shown by the small amount of arrears incurred, averaging under one-half per cent. The benevolent fund, started in 1929, to provide appliances, such as belts and trusses, and certain expensive medicines excluded from the scheme, has helped 51 cases during the year and has a balance in hand. The report and balance sheet were adopted.

CORRESPONDENCE

A MATERNITY SERVICE.

To the Editor of THE LANCET.

SIR,—I have read with much interest the lectures by Prof. Blair Bell on the subject of Maternal Disablement, and I am emphatically in agreement with him in his conclusion that maternity hospitals should be attached to general hospitals. I should like to have found more emphasis laid on the importance of having senior resident obstetricians on the staff of such hospitals, as I regard these positions as vital, both for the welfare of the patients in the hospitals and for the training of consultants.

Midwifery differs from other branches of medical practice in that it combines long periods of patient watching with moments of intense activity at times that cannot be predicted with any accuracy. These conditions fit in badly with the appointments of a consultant doing private practice, and it is essential that there should be someone more responsible and capable than a house surgeon in continuous charge of the cases in the hospital. Again it is perhaps not going too far to say that tenure of such a position is an essential part of the training of an obstetrician. Midwifery has suffered in the past from the gynæcological attitude to the subject, and the best corrective for this will be a long period of residence in a maternity hospital as part of the training of the consultants in the future.

I am, Sir, yours faithfully,

HENRY H. MACWILLIAM,

June 15th, 1931. Medical Officer, Walton Hospital, Liverpool.

MATERNAL MORTALITY-RATE.

To the Editor of THE LANCET.

SIR,—Two footnotes to Prof. W. Blair Bell's second Ingleby lecture, published in your issue of June 13th (p. 1279) indicate that he does not quite realise how maternal mortality is calculated in this country, and what would be the effect on the rate if the changes were made in that method which he suggests. Prof. Bell states that "We . . . only count maternal deaths in women who give birth to live children." This is not so. The numerator of the fraction which constitutes the maternal mortality-rate includes the deaths of women from all causes during pregnancy, labour, or the puerperium (except criminal abortions) unless they have died from such diseases as do not arise from pregnancy, labour, or the puerperium. Prof. Bell probably has in mind the fact that the denominator of the fraction includes only live births and excludes both stillbirths and abortions, with the result that the rate is not a perfectly true index of the fatality of childbirth and pregnancy. It will be clear, however, that if the denominator were enlarged by the inclusion of these conditions the change would have the effect of lowering our maternal mortality-rate, not of increasing it.

I am, Sir, yours faithfully,

RALPH M. F. PICKEN.

Public Health Department, Cardiff, June 15th, 1931.

To the Editor of THE LANCET.

SIR,—I shall be obliged if you will allow me to correct a misstatement in my second Ingleby lecture, which was published in your issue of to-day's date. I said that the maternal mortality-rate in England and Wales is calculated in relation to live births, and this is true in the sense that stillbirths are not taken into account. I understand, however, that all maternal deaths are counted. It would appear, therefore, that the maternal mortality-rate recorded by the Registrar-General is higher than it should be, and not lower. In either case the mathematics are wrong, and it is high time some correct international standard was adopted for the sake of accuracy and to simplify comparison.

I am, Sir, yours faithfully,

Liverpool, June 13th, 1931. W. BLAIR BELL.

THE CLEAN MILK PROBLEM.

To the Editor of THE LANCET.

SIR,—I am glad to see Dr. Savage's letter in your issue of June 6th, and to find that we are agreed upon two very important aspects of the milk problem concerning which he says:—

> (1) "That any widespread system of pasteurisation will put back the clock as regards the production of clean milk. I think this is a probable and undesirable result and the evil should be minimised so far as possible. (2) I should prefer to see provided a clean safe pure milk-supply without any heat treatment."

If our country were wiser, it would be taking every step to eliminate disease from cattle in the interests of our agricultural community; but the fact that our industrial population is able to obtain large quantities of foodstuffs from distant countries blinds it to this necessity. It seems important therefore to arouse its interest, and this object might be attained if it were proved that the provision of fresh foodstuffs was of real importance, not only to the physique of the nation, but also to its power to resist disease. Concerning the first of these problems, Dr. Savage states:—

> "I do not think that its opponents have demonstrated, when efficiently performed, that it (i.e., pasteurisation) does any material damage to any known nutritional factor in milk, but the last word has not been said on this side and our knowledge is admittedly incomplete."

This is the fairest statement that I have yet seen from any of those who desire compulsory pasteurisation, but it can be said with truth that the problem of the relative nutritional values of different types of milk has never been adequately studied either in this or in any other country. The work of those who are studying the subject all tends to show that there may be a very real difference which is of importance to the nutrition of our people, and it is my opinion that those who wish for further milk legislation must satisfy themselves of the truth or otherwise of this possibility before they advocate a method which has always ended in reducing fresh milk to a minimum in those countries which have adopted it.

Dr. Savage speaks of opponents to the pasteurisation of milk, and apparently assumes that I am one of them. That is not the case. I believe that pasteurisation is rendering a very great service both to the country and to the milk industry, and that we owe a debt of gratitude to the members of the industry who have endeavoured to use it as efficiently as possible. It is doubtful if it ought to be allowed to become a master—and yet it is very important that we should eliminate milk-borne diseases. The question therefore is to what length we can go in view of the present position of the milk industry. I think myself that the following steps might be

practicable: make it permissible to sell, in the fresh state, milk which attains to the standard that is now applied to Grade "A," and treat compulsorily all that which fails to do so. To my mind, this method of overcoming our difficulties, although not perfect, would go a long way towards eliminating the dangers of disease, and could be limited to a period of time if, in the interval, sufficiently active steps had been taken to promote the increase of milk from herds which do not react to the tuberculin test.

Moreover, my suggestion could be made much more widely applicable than the one that has been put forward by Dr. Savage, and the possibility of its attainment is well illustrated by the progress that has been made by small farmers in Cornwall in the production and sale of milk of this character. I should be grateful if Dr. Savage could find time to see that work for himself, since it is an admirable demonstration of what might be accomplished throughout Great Britain.

It surprises me that Dr. Savage should throw the responsibility for the study of the nutritional values of the different types of milk upon my colleagues and myself, since it is work which is really within the province of those who are responsible for human nutrition. I believe however we could render them material assistance, particularly by providing them with milk which had been produced under carefully controlled conditions.

I am, Sir, yours faithfully,

R. STENHOUSE WILLIAMS.

The National Institute for Research in Dairying, Shinfield, near Reading, June 8th, 1931.

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To the Editor of THE LANCET.

SIR,—Mr. E. R. Flint refers (p. 1321) to the results of the B.M.A. collective investigation into the after-results of gastro-enterostomy as reported by me.[1] He quite correctly gives the post-operative mortality-rate as 4·3 per cent. for the massed cases of duodenal and pyloric ulcers, but if he will refer to the addendum [2] to the investigation he will find that a much lower post-operative mortality is obtained when the operation of posterior gastro-enterostomy is combined with excision, cauterisation, or infolding of the ulcers. In the massed cases of duodenal and pyloric ulcers in which that operation was performed the post-operative mortality is only 1·6 per cent. It is only fair to point out that this particular type of operation was performed on a comparatively small number of cases—viz., 244—but I ventured in the addendum report, writing only as a statistician, to observe that the figures show that the operation, where combined with removal or infolding of the ulcer, is associated with a much lower post-operative mortality than in the cases of the other operations.

I am, Sir, yours faithfully,

Limpsfield, June 13th, 1931. ARTHUR P. LUFF.

To the Editor of THE LANCET.

SIR,—The clinical recognition and surgical treatment of duodenal ulcer owe so much to the genius of Lord Moynihan that the strongest grounds for differing from his appraisement of the value of any particular operation would alone justify a departure from the routine treatment as laid down by him. By his consummate skill and infinite attention to detail in pre- and post-operative treatment he has attained a degree of success with gastro-jejunostomy which, strive how I will, I have not been able to approach. In comparison with his 90 per cent., I cannot claim as cured—in the sense I used the term in my communication last week—more than 60 per cent. of patients who have failed to get permanent benefit by medical means. This measure of success falls so short of the ideal that it is almost compelling in its urge to search for a more satisfactory procedure. This I have attempted to do by exploring the possibilities of resection with the results already communicated. Lord Moynihan, I know, is, in general, in sympathy with surgical research of this kind, though I believe he feels strongly that such experiments should not be extended without adequate safeguard, with which sentiment every thoughtful surgeon must agree.

The points Mr. E. R. Flint brings forward are mostly answered in my paper. Particularly would I refer him to my remarks upon the fallibility of massed statistics. He criticises me for not resecting cases where the lesion was a small soft one which looked as though it might heal. This course seemed to me to be in the best interests of the patients, though resection in them would have been easy and swelled the statistics. His suggestion that the mortality would have been higher if ulcers adherent to the pancreas had been resected is not justified by the facts. Surgeons who resect duodenal ulcers know that the posterior wall is the commonest site for them. Very many of my resected ulcers have been adherent to the pancreas and in a considerable number the floor of the ulcer has been left on this viscus. I claim no more than to have made a serious investigation into the surgical treatment of duodenal ulcer which my results indicated was necessary, and I judged from Mr. Flint's publications of recent years that he also felt the need for it as he seemed to be abandoning gastro-jejunostomy for gastro-duodenostomy. No other English surgeon, as far as I know, has published his comparative results of resection and gastro-jejunostomy. If Mr. Flint would resect a series of ulcers I am convinced he would appreciate the truth of statements I have made.

I am, Sir, yours faithfully,

CHARLES A. PANNETT.

St. Mary's Hospital, W., June 14th, 1931.

[1] Brit. Med. Jour., 1929, ii., 1074 and 1125.
[2] Ibid., p. 1212.

AIR MOVEMENT IN SANATORIA.

To the Editor of THE LANCET.

SIR,—As I was on the staff of a chest hospital at the time when the open-air method began (about 1896) to be actively pushed in this country, and have been intimately concerned with sanatorium treatment from that time onwards, I am in a position to answer some of Dr. Macfie's questions in your issue of May 30th (p. 1211).

The effect of open-air methods has in my experience been entirely good. If only common sense is used, I do not believe that harm will ever result from these methods. Our object is to stimulate nutrition and reduce fever (if present) by cooling, but not chilling, the skin; and we must take into consideration both the meteorological conditions and the patient's individual reactive power. Wind and damp always increase the chilling effect. Whether snowflakes on the bed are likely to hurt the patient depends entirely upon circumstances. I have known some patients who remained perfectly comfortable in spite of drifting snow on their beds, and who objected to being brought into a more sheltered place.

So many things affect the progress of the tuberculous that we cannot draw conclusions from Dr. Macfie's Canadian example without knowing much more of the circumstances, but I very much doubt whether an atmosphere which seems stuffy to a healthy visitor is likely to be advantageous to any tuberculous patient in any place. Nor do I believe that we are "overdoing the open-air treatment in this country," although the large size of many sanatoria may make individualisation difficult. Sanatorium methods have varied greatly in England; but the error, if any, has been (I believe) more often on the side of timidity than on that of rigour, because attendant nurses and doctors feel the cold more than a patient in bed suitably covered, especially if the former are insufficiently clad or accustomed to hot rooms. The only safe criterion is the physical effect on the patient at the time, and this needs watching.

The introduction of sanatorium methods here had a very marked effect in improving the faulty ventilation prevalent in private houses; and this was also improved by the return of our soldiers from fresh-air conditions abroad during the Great War. Recently there has been a slight relapse, but not to the bad old standard. The increase of motor traffic, with the noise and dust it causes, may have something to do with this relapse. It appears to me, however, that there are still far more open windows to be seen in cold weather than used to be the case, at all events in this part of England.

I am, Sir, yours faithfully,

Farnham, Surrey, June 9th, 1931. F. R. WALTERS.

TREATMENT OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—During the last few weeks I have been acting as medical officer (infectious diseases) for the county borough of Rotherham, and therefore have come into more immediate contact with the recent cases of cerebro-spinal fever.

The routine treatment so far has consisted of lumbar punctures when necessary, with intrathecal doses of antimeningococcic serum, along with intravenous and occasionally intraperitoneal injections of the serum. The difficulty in obtaining type sera in time to be of use has so far been almost insuperable. After trying all the usual methods with varying doses of serum (from 40 to 180 c.cm.) I felt sure that if it were possible to establish a further reaction in the patient some result might be seen. With this end in view almost three weeks ago I took one case, a girl of 12, meningococci present in cerebro-spinal fluid: four days of illness, progressively getting worse, at this stage comatose, delirium passed and patient sinking, incontinent, &c. At this stage I did a further lumbar puncture and injected 1 c.cm. of thick fluid into the gluteal muscles, as withdrawn. Within 12 hours there was slight improvement; 36 hours later temperature rose about 1° and she was conscious again; temperature came down from 101·2° to normal in about three days further and stayed down; the condition generally improved and the improvement is still maintained.

Case 2.—A man, aged 25 years, was admitted to me four weeks ago. Responded at first to routine treatment, then relapsed slightly and became stationary; after 14 days he became lethargic, incontinent, and after two further days was fully unconscious; I did further lumbar puncture, found thicker fluid than before, and injected 1 c.cm. in the gluteal muscles. His chart shows a slight reaction during the next 12 hours and during the next three days he improved slightly. I then repeated the dose, finding his fluid clear (meningococci still present but attenuated), giving a further 1 c.cm. into the gluteal muscles; he reacted slightly again in the next 12 hours, and since then has improved steadily, temperature running a normal course since 36 hours after the second dose.

Case 3.—A boy, aged 4 years, responded to routine treatment, and after nine days became retrogressive; given 1 c.cm. of his own cerebro-spinal fluid six days ago, he has responded satisfactorily so far.

I have no more cases to try further with, and although this treatment so far has promised extremely well, it cannot be regarded as conclusive. I propose to try it out further with any cases we may be unfortunate enough to collect. If, in the meantime, anyone with fresh cases would be good enough to try the method and let me know results I should be extremely grateful. These three cases have been exact parallels of numbers of fatal cases we have had, although differing individually in certain elements. There has been no local reaction to the injections of cerebro-spinal fluid in the muscle. I would suggest that the antiserum should still be continued.

I am, Sir, yours faithfully,

LANCELOT H. COPPING, M.B., Ch.B.,
Assistant Medical Officer of Health, County
June 15th, 1931. Borough of Rotherham.

AFRICAN TICK FEVER.

To the Editor of THE LANCET.

SIR,—In the historical account of this fever in Vol. 8 of the System of Bacteriology recently issued by the Medical Research Council no reference is made to my discovery of the spirochæte. I have no desire to revive the controversy of 27 years ago as to the relative parts played by Castellani, Bruce, and myself in the elucidation of the cause and mode of transmission of sleeping sickness. But in an authoritative work of this kind (and I should like to congratulate the editors on its excellence) justice should be done to the various observers who have worked at a disease. It was in August, 1903, when examining the blood of a suspected sleeping sickness patient that I discovered the spirochætes of relapsing fever on several occasions in the patient's blood. I showed the films to Colonel Bruce, and his comment was that they probably came from the distilled water which had been used in staining the blood film and that they were not in the patient's blood. I pointed out to him, however, that I had stained 20 or more films from other humans and animals that same day and this was the only one which showed the spirochætes. The case is fairly fully described in Part 5 of the reports of the Sleeping Sickness Commission, which was dated Entebbe, Nov. 20th, 1903. This report was, for some reason, withheld from publication until July, 1905, by which time Cook and Ross and Milne, all of Uganda, had rediscovered this spirochæte and obtained the credit for the discovery. The incident is mentioned in the first edition (1910) of Castellani and Chalmers's Manual of Tropical Medicine.

I am, Sir, yours faithfully,

London, W., June 10th, 1931. DAVID NABARRO.

ESTIMATION OF BASAL METABOLISM.

To the Editor of THE LANCET.

SIR,—I read with interest in your last issue the article by the late Dr. A. M. Gale and Mr. C. H. Gale in which they put forward a new formula for estimating the basal metabolic rate (B.M.R.) from

practicable: make it permissible to sell, in the fresh state, milk which attains to the standard that is now applied to Grade "A," and treat compulsorily all that which fails to do so. To my mind, this method of overcoming our difficulties, although not perfect, would go a long way towards eliminating the dangers of disease, and could be limited to a period of time if, in the interval, sufficiently active steps had been taken to promote the increase of milk from herds which do not react to the tuberculin test.

Moreover, my suggestion could be made much more widely applicable than the one that has been put forward by Dr. Savage, and the possibility of its attainment is well illustrated by the progress that has been made by small farmers in Cornwall in the production and sale of milk of this character. I should be grateful if Dr. Savage could find time to see that work for himself, since it is an admirable demonstration of what might be accomplished throughout Great Britain.

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To the Editor of THE LANCET.

SIR,—As I was on the staff of a chest hospital at the time when the open-air method began (about 1896) to be actively pushed in this country, and have been intimately concerned with sanatorium treatment from that time onwards, I am in a position to answer some of Dr. Macfie's questions in your issue of May 30th (p. 1211).

The effect of open-air methods has in my experience been entirely good. If only common sense is used, I do not believe that harm will ever result from these methods. Our object is to stimulate nutrition and reduce fever (if present) by cooling, but not chilling, the skin; and we must take into consideration both the meteorological conditions and the patient's individual reactive power. Wind and damp always increase the chilling effect. Whether snowflakes on the bed are likely to hurt the patient depends entirely upon circumstances. I have known some patients who remained perfectly comfortable in spite of drifting snow on their beds, and who objected to being brought into a more sheltered place.

So many things affect the progress of the tuberculous that we cannot draw conclusions from Dr. Macfie's Canadian example without knowing much more of the circumstances, but I very much doubt whether an atmosphere which seems stuffy to a healthy visitor is likely to be advantageous to any tuberculous patient in any place. Nor do I believe that we are "overdoing the open-air treatment in this country," although the large size of many sanatoria may make individualisation difficult. Sanatorium methods have varied greatly in England; but the error, if any, has been (I believe) more often on the side of timidity than on that of rigour, because attendant nurses and doctors feel the cold more than a patient in bed suitably covered, especially if the former are insufficiently clad or accustomed to hot rooms. The only safe criterion is the physical effect on the patient at the time, and this needs watching.

The introduction of sanatorium methods here had a very marked effect in improving the faulty ventilation prevalent in private houses; and this was also improved by the return of our soldiers from fresh-air conditions abroad during the Great War. Recently there has been a slight relapse, but not to the bad old standard. The increase of motor traffic, with the noise and dust it causes, may have something to do with this relapse. It appears to me, however, that there are still far more open windows to be seen in cold weather than used to be the case, at all events in this part of England.

I am, Sir, yours faithfully,

Farnham, Surrey, June 9th, 1931. F. R. WALTERS.

TREATMENT OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—During the last few weeks I have been acting as medical officer (infectious diseases) for the county borough of Rotherham, and therefore have come into more immediate contact with the recent cases of cerebro-spinal fever.

The routine treatment so far has consisted of lumbar punctures when necessary, with intrathecal doses of antimeningococcic serum, along with intravenous and occasionally intraperitoneal injections of the serum. The difficulty in obtaining type sera in time to be of use has so far been almost insuperable. After trying all the usual methods with varying doses of serum (from 40 to 180 c.cm.) I felt sure that if it were possible to establish a further reaction in the patient some result might be seen. With this end in view almost three weeks ago I took one case, a girl of 12, meningococci present in cerebro-spinal fluid: four days of illness, progressively getting worse, at this stage comatose, delirium passed and patient sinking, incontinent, &c. At this stage I did a further lumbar puncture and injected 1 c.cm. of thick fluid into the gluteal muscles, as withdrawn. Within 12 hours there was slight improvement; 36 hours later temperature rose about 1° and she was conscious again; temperature came down from 101·2° to normal in about three days further and stayed down; the condition generally improved and the improvement is still maintained.

Case 2.—A man, aged 25 years, was admitted to me four weeks ago. Responded at first to routine treatment, then relapsed slightly and became stationary; after 14 days he became lethargic, incontinent, and after two further days was fully unconscious; I did further lumbar puncture, found thicker fluid than before, and injected 1 c.cm. in the gluteal muscles. His chart shows a slight reaction during the next 12 hours and during the next three days he improved slightly. I then repeated the dose, finding his fluid clear (meningococci still present but attenuated), giving a further 1 c.cm. into the gluteal muscles; he reacted slightly again in the next 12 hours, and since then has improved steadily, temperature running a normal course since 36 hours after the second dose.

Case 3.—A boy, aged 4 years, responded to routine treatment, and after nine days became retrogressive; given 1 c.cm. of his own cerebro-spinal fluid six days ago, he has responded satisfactorily so far.

I have no more cases to try further with, and although this treatment so far has promised extremely well, it cannot be regarded as conclusive. I propose to try it out further with any cases we may be unfortunate enough to collect. If, in the meantime, anyone with fresh cases would be good enough to try the method and let me know results I should be extremely grateful. These three cases have been exact parallels of numbers of fatal cases we have had, although differing individually in certain elements. There has been no local reaction to the injections of cerebro-spinal fluid in the muscle. I would suggest that the antiserum should still be continued.

I am, Sir, yours faithfully,

LANCELOT H. COPPING, M.B., Ch.B.,
Assistant Medical Officer of Health, County
June 15th, 1931. Borough of Rotherham.

AFRICAN TICK FEVER.

To the Editor of THE LANCET.

SIR,—In the historical account of this fever in Vol. 8 of the System of Bacteriology recently issued by the Medical Research Council no reference is made to my discovery of the spirochæte. I have no desire to revive the controversy of 27 years ago as to the relative parts played by Castellani, Bruce, and myself in the elucidation of the cause and mode of transmission of sleeping sickness. But in an authoritative work of this kind (and I should like to congratulate the editors on its excellence) justice should be done to the various observers who have worked at a disease. It was in August, 1903, when examining the blood of a suspected sleeping sickness patient that I discovered the spirochætes of relapsing fever on several occasions in the patient's blood. I showed the films to Colonel Bruce, and his comment was that they probably came from the distilled water which had been used in staining the blood film and that they were not in the patient's blood. I pointed out to him, however, that I had stained 20 or more films from other humans and animals that same day and this was the only one which showed the spirochætes. The case is fairly fully described in Part 5 of the reports of the Sleeping Sickness Commission, which was dated Entebbe, Nov. 20th, 1903. This report was, for some reason, withheld from publication until July, 1905, by which time Cook and Ross and Milne, all of Uganda, had rediscovered this spirochæte and obtained the credit for the discovery. The incident is mentioned in the first edition (1910) of Castellani and Chalmers's Manual of Tropical Medicine.

I am, Sir, yours faithfully,

London, W., June 10th, 1931. DAVID NABARRO.

ESTIMATION OF BASAL METABOLISM.

To the Editor of THE LANCET.

SIR,—I read with interest in your last issue the article by the late Dr. A. M. Gale and Mr. C. H. Gale in which they put forward a new formula for estimating the basal metabolic rate (B.M.R.) from

the pulse-rate and pulse pressure. They show that this formula gives results closer to the B.M.R., as actually observed by Read in his large series, than does either of Read's formulæ which are also based on the pulse-rate and pulse pressure. On applying Gale's formula to the same series, it is found to give results which approximate closely to the observed B.M.R. when the latter is normal or increased. But when the observed B.M.R. is subnormal, Gale's formula (P.R.+P.P.−111) gives results that are too high, and the lower the observed B.M.R. the greater the error.

Using the same table of results as set out in the Gales' paper, the formula becomes more accurate if the figure subtracted from the sum of the pulse-rate and pulse pressure is increased as the sum of P.R.+P.P. becomes less. For practical purposes I suggest that when P.R.+P.P. is less than 111 (B.M.R. less than 0), the figure subtracted be 111+5, and that when P.R.+P.P. is less than 91, the figure subtracted be 111+10. The following table, taken from Table I. of the Gales' paper, will serve as the best illustration :—

Observed B.M.R. per cent.	Mean values.			Cases.
	P.R.+P.P.	P.R.+P.P. −116	P.R.+P.P. −121	
− 0 to − 9·9	109·1	− 6·9	..	137
−10 to −19·9	104·2	−11·8	..	119
−20 to −29·9	93·3	−22·7	..	38
−30 to −39·9	88·5	..	−32·5	4

I am, Sir, yours faithfully,

B. BUCKLEY SHARP.

Welbeck-street, W., June 17th, 1931.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

HONORARY FELLOWSHIPS AT THE ROYAL COLLEGE OF SURGEONS.

LAST Saturday the President of the Royal College of Surgeons in Ireland admitted to the honorary Fellowship of the College Dr. George Eli Armstrong, of McGill University, and Sir Hugh Mallinson Rigby, of London. The new Fellows were presented to the President by the honorary secretary of the College, Sir F. Conway Dwyer. He recalled that in Sir Hugh Rigby the College was welcoming an Irishman and a native of Dublin. Subsequently the new Fellows were entertained to dinner in the College.

SWEEPSTAKES : VOLUNTARY AND COUNTY HOSPITALS.

After another somewhat acrimonious debate in the Dáil last week on the report stage of the Public Charitable Hospitals (Amendment) Bill, it was agreed that one-third of the funds distributable to hospitals should, in future, go to the county hospitals. An important suggestion was made in the course of the debate by Dr. Hennessy—namely, that 10 per cent. of the proceeds of sweepstakes should be devoted to medical research. It is notorious that financial provision for research is badly needed in Ireland. The universities have no money to spare, and are not in a position to do much more than they are doing at present, and almost the only provision is certain grants given by the Rockefeller Foundation. It ought not to be beyond the power of the Dáil to insert a clause into the present Bill making, at any rate, some provision for medical research.

A PHARMACOPŒIA FOR THE IRISH FREE STATE.

In moving the second reading of the Pharmacopœia Bill last week, Mr. Richard Mulcahy, Minister for Local Government and Public Health, divulged the interesting fact that since the setting up of the Irish Free State Medical Registration Council the British Pharmacopœia had no longer a statutory authority in the Irish Free State, and he was advised that there was at present no pharmacopœia in force. The Bill proposes to adopt the British Pharmacopœia with such alterations, additions, and omissions as the Irish Medical Registration Council may decide on.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

RESEARCH ON THE BRAIN.

RESPONDING to an appeal by Prof. Wagner-Jauregg, the Nobel laureate, Prof. C. Economo has succeeded in organising an institute for systematic research on the brain. For over 20 years he has been working on these lines, and lately comparative anatomy has received his special attention. He has demonstrated a definite evolution or "progressive cerebration" in the ancestral line of mankind—an evolution manifested not so much by the increase of weight (comparative and absolute) as by increase of gyri and sulci. He believes that we are justified in assuming that the brain of man is still capable of unheard-of development.

Dr. A. Poller has devised a method for obtaining absolutely correct casts of the brain so that study of each separate part is possible. For instance, the anatomical substrate of musical talent can, he thinks, be discovered by comparing the brain of highly musical persons and those with no such gifts. The next object of this new institute will be to study the problem of talent, and for this purpose it is necessary to obtain the brains of eminent persons, excelling in some particular direction. An appeal has been published in the daily press asking for bequest of brains, not only by people who show special musical, mathematical, physical, or other abilities, but also by those who are left-handed or deaf-mutes. Prof. Wagner-Jauregg has already bequeathed his brain to the institute, which is housed in the Vienna Psychiatric Clinic.

STERILISATION OF MENTAL DEFECTIVES.

At a meeting of the Medico-Legal Society in Vienna, Dr. Höpler, the Attorney-General of Austria, made an interesting report on the present trend of opinion and the existing legislation on sterilisation of mentally defective persons. He expressed himself in favour of compulsory sterilisation on eugenic grounds, because the offspring of such people are a threat and a handicap to the human race. In this respect, Dr. Höpler is much further advanced than the new penal code which is under consideration in Germany, and to which Austria will probably consent. In Austria, the existing code threatens to punish any operator who performs any operation for other than therapeutic purposes ; the offence is qualified as : "inflicting serious bodily injury," and the punishment may be imprisonment for a long term, even if the patient has given his consent. It may be recalled

that two years ago a certain surgeon in Graz, who performed temporary sterilisation on men, was sentenced to a heavy fine, and only acquitted after two appeals before the Supreme Court. In the new draft of the penal code, which has lately been worked out by the legal committee of the Austrian National Assembly, the consent of the patient to a sterilisation, performed "lege artis" by a qualified surgeon, shall not be deemed an offence, nor shall the surgeon be punishable in such an instance. On the other hand, sterilisation will not be regarded as a penalty or even as an alternative penalty for a criminal offence, and will not serve to shorten a term of imprisonment. Dr. Höpler is, as mentioned before, much more radical. He thinks that sterilisation has nothing to do with the punitive idea, and advocates a clause for the new code requiring that all persons from whom only defective children are to be expected should be subjected to a sterilising operation upon a judicial order. Such an order must, of course, be given only under the strictest control by State authorities and with greatest caution, including the examination of the patient by a committee of qualified medical men, and the right of appeal given to the family or the marriage partner of the person against whom such an order is made. The operation would be performed only in public institutions, and if possible should be centralised.

PUBLIC HEALTH SERVICES

MENTAL HOSPITAL REPORTS.

THE CHESHIRE COUNTY MENTAL HOSPITAL at MACCLESFIELD had 1334 patients on its register on the last day of 1930, and was then so crowded that only acute and urgent cases could be admitted. So far, no substantial progress has been made towards providing additional accommodation, although several plans have been discussed. The workhouses have been inspected with a view to using their space, but they were found to be entirely unsuitable. The recovery-rate for the year was 31·8 per cent. and the death-rate 4·8 per cent.—the lowest on record. Apart from a small epidemic of influenza and six sporadic cases of dysentery, the general health was satisfactory. Of the eight cases of general paralysis admitted, four were suitable for malarial treatment, and three of them were discharged fit for work. Light treatment was given to a number of patients, while others had radiant heat, prolonged and Turkish baths, and electrical treatment. The new occupation pavilion is nearing completion and the occupation officer has had six months' study leave for training. The dietary has been improved by the substitution of butter and English meat for margarine and foreign meat respectively, but there has been no rise in the cost of maintenance. During the year 1876 investigations were carried out in the laboratory, which also undertakes the bacterial work of the Macclesfield public health authority. Two special reports deal with the family history and the relation of the cause of death to the type of insanity. It was found that the proportion of relatives suffering from some degree of mental affliction to the number of patients admitted is nearly 1 to 3; that tuberculosis has been displaced, during the last ten years, from its position as principal cause of death, and that there has been a very great diminution of fatal colitis and dysentery. The largest number of deaths from tuberculosis was found in the schizophrenic group; only 7 per cent. of patients dying from malignant growths belonged to this group. This is not entirely due to the age factor, since 8 per cent. of melancholics and 20 per cent. of paranoid cases died from malignant tumours. No schizophrene died of intestinal catastrophe. The committee have decided to open an out-patient clinic at the institution and to appoint a social worker. The systems of trial and parole are freely used. During the year 15 nurses and five attendants obtained their R.M.P.A. certificate, one nurse with distinction; 83 per cent. of the male nurses and 37 per cent of the female nurses have been in the institution for more than five years. Women are employed for all work, except for some night duty in the male wards.

The GLASGOW ROYAL ASYLUM had 555 patients in residence at the end of last year; of the 150 patients admitted during the year, 74 were voluntary boarders. The directors have acquired an estate in Dumbartonshire which is to be opened as an ordinary nursing-home, without formalities of admission, for patients suffering from incipient nervous and mental disorder. It has been suggested that the former East House kitchen and mess-rooms should be converted into a reception unit with a hydrotherapeutic and electrical department, and a library upstairs. The recovery-rate for the year was 34·8 per cent. and the death-rate 7·4 per cent. A careful study of the malarial treatment of general paralysis has been made; the results have been most encouraging. The occupation therapy department continues to work well. The occupation officer finds that basketry is one of the most useful crafts, as it involves many activities, from the elementary process of sand-papering upwards, and the concentration required for the actual weaving is often just what is necessary to hold the patient's attention. The dental surgeon saw 239 patients during the year. The hospital has also a complete visiting staff of specialists. The convalescent villa at Skelmorlie continues to give great pleasure to those who go there for a change or for a period before discharge. Over 150 patients have parole within the grounds. All nurses now take the examination of the General Nursing Council.

HOSPITAL FOR PRIVATE PATIENTS.

The admissions to THE LAWN, LINCOLN, for the year 1930 included 22 voluntary boarders and 10 certified patients; many of the voluntary patients were definitely psychotic and certifiable, but the medical superintendent finds it perfectly possible and satisfactory to treat them on a voluntary basis. Of the 38 inquiries which did not lead to admission a very large number probably required treatment, but the charitable resources of the hospital were insufficient to meet their needs. The recovery-rate for the year was 66·6 per cent., and five certified patients died from natural causes. The general health was good and there was no epidemic disease. Many patients visited the theatre, concerts, and cinema, and an increasing number go out on parole. A masseuse who worked at the hospital during her summer vacation proved to be of great benefit to the patients, and it is hoped before long to appoint a full-time officer. The valuable work of this institution is hampered by lack of funds, and a special appeal is being made this year for donations and annual subscriptions.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 6TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 83; scarlet fever, 1380; diphtheria, 767; enteric fever, 46; pneumonia, 794; puerperal fever, 34; puerperal pyrexia, 111; cerebro-spinal fever, 53; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 13; dysentery, 9; ophthalmia neonatorum, 113. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 9th–10th was as follows:—Small-pox, 136 under treatment, 2 under observation (last

week 149 and 7 respectively); scarlet fever, 1134; diphtheria, 1381; enteric fever, 14; measles, 175; whooping-cough, 425; puerperal fever, 36 (plus 11 babies); encephalitis lethargica, 195; poliomyelitis, 1; "other diseases," 157. At St. Margaret's Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 1 (1) from enteric fever, 26 (0) from measles, 5 (2) from scarlet fever, 20 (6) from whooping-cough, 18 (2) from diphtheria, 40 (5) from diarrhœa and enteritis under two years, and 30 (5) from influenza. The figures in parentheses are those for London itself.

The case provisionally classified to small-pox was assigned to East Ham C.B. No death from meningococcal meningitis occurred in London. Five deaths from measles were reported from Birmingham, 4 each from Liverpool and South Shields. Diphtheria claimed 3 victims at Hull. Diarrhœa was credited with 10 deaths at Birmingham, 4 at Coventry.

The number of stillbirths notified during the week was 287 (corresponding to a rate of 39 per 1000 births), including 61 in London.

PORT SANITARY AUTHORITY.

IN his first annual report to the PORT of BRISTOL authority Dr. R. H. Parry mentions that during the year 1930 1160 ships arrived from abroad at the three ports of Bristol, Avonmouth, and Portishead, and 5846 coastwise. Of these 187 were visited by the medical officer, 3378 by sanitary inspectors. No case of cholera, yellow fever, small-pox, or typhus came to notice, but one case of (clinical) plague, an inguinal bubo, in a second engineer, was found on a grain ship from the Black Sea. The case was removed to hospital and did not at this date prove bacteriologically positive. Luckily there were few rats aboard, the grain cargo was discharged under supervision, the one rat trapped was negative; the ship was fumigated with hydrocyanic acid, no further rats being found. The rats on the neighbouring dockside when examined were also found free of plague. During the year 1344 rats were destroyed on vessels, 3107 on shore; 408 were examined, all free of plague. Care is being taken continuously to reduce rat harbourage on ships and ashore. Experiments with an electric rat-guard proved unsatisfactory, for even a direct current of 500 volts merely stunned a rat for a couple of minutes. Of 3378 vessels examined for nuisances, 12 were found defective in original construction, 197 through wear and tear, and 410 were dirty or verminous. Of venereal disease 32 cases came under the notice of the port medical officer; 158 persons made 553 gratuitous attendances to the clinic provided. Much food reaches England through Bristol, and is for the most part (the report says "invariably") in good condition; some 34 tons of wheat, 10 of maize, and 10 of barley were condemned. Bananas, 102,163 tons arrived; none reported unsound. Of 11 samples of water taken from ships (reason for choice unstated) 8 were classed as unfit, 2 reports were indefinite, and only one (from Madeira) was declared perfectly sound. Presumably the water on board merchant ships is generally better than thus appears; in fact only two cases (five years average, 3·8) of typhoid were reported on board all incoming vessels during the year. No insanitary conditions were found among 29 canal boats inspected.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

PUBLIC HEALTH IN MAURITIUS.

ON the second reading in the House of Commons on June 12th of the Mauritius Loan (Guarantee) Bill, Mr. LUNN, Under Secretary for the Dominions (in the absence of Dr. Drummond Shiels, the Under Secretary for the Colonies) said that the position in regard to public health in the Colony of Mauritius was that the island was over-populated. The density of the population was 550 to the square mile. The bulk of the population lived normally on the very limit of bare subsistence, and it was inevitable that in times of depression such as now existed some of them who became unemployed or received a diminishing return from their small holdings should be forced below that limit. The only remedies for this state of affairs were an increase in the productivity of the island or a decrease in its population. Measures for increasing the productivity of the island were under consideration by the Agricultural Department of the Colony and the agricultural advisers of the Secretary of State for the Colonies. On the strictly public health side there was little that could be done to remedy under-nourishment. The record of the Government of Mauritius in public health matters was, he understood, a good one. They had in recent years spent very large sums on public health works, such as antimalarial measures and the improvement of water-supply, and there was no doubt that such efforts would continue to be prosecuted as funds were available. If the measure of assistance now proposed under this Bill had not been given to the Colony the economic position would very rapidly have become worse. Under-nourishment would not only have become more widespread, but might have developed into actual starvation.

After some debate the Bill was read a second time without a division.

WORKMEN'S COMPENSATION ACT.

On June 11th in the House of Lords the Royal Assent was given to the Workmen's Compensation Act, 1931, the Alexander Scott Hospital Order Confirmation Act, 1931, and the Liverpool University Act, 1931.

BETHLEM HOSPITAL BILL.

In the House of Lords on June 16th Lord PONSONBY moved the second reading of the Bethlem Hospital (Amendment) Bill. He said that the Bill was necessary to enable Bethlem Hospital to be used as a war museum. By the generosity of Lord ROTHERMERE, the building and site had been handed over to the London County Council as an open space. It was proposed under the Bill to use the centre part of the building, which contained the dome, as the war museum. The rest of the site would remain in the hands of the London County Council as a garden and open space. The result of the Bill would be to relieve the present overcrowding in the Imperial War Museum at South Kensington. The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 10TH.

Insured Women and Dental Benefit.

Mr. LOVAT-FRASER asked the Minister of Health the number of insured women under the National Health Insurance Act who were entitled to additional benefit, No. 9 (dental benefit), under the valuation schemes of approved societies for the second valuation period, and the number of insured women who were, or would be, entitled to such benefit under the third valuation schemes.—Miss SUSAN LAWRENCE (Parliamentary Secretary to the Ministry of Health) replied: The number of insured women members of approved societies and branches in England having schemes of dental benefit following the second valuations was approximately 4,250,000. The complete results of the third valuation are not yet available, but my right hon. friend regrets to say that from the results already received it is evident that there will be a consider-

able reduction in the number of women entitled to dental benefit.

Dental and Ophthalmic Treatment.

Mr. JOHN asked the Minister of Health whether he proposed to make dental and ophthalmic treatment statutory benefits for all members of approved societies under the National Health Insurance Acts; and, if so, at what date.—Mr. GREENWOOD replied: No such proposal is at present in contemplation.

Legislation to Amend the Children Act.

Viscountess ASTOR asked the Prime Minister whether, having regard to the need for a new Children's Bill, he could find time for the proposed Government Bill to be taken this session.—Mr. MACDONALD replied: The Government are fully aware of the need of legislation to amend the Children Act, but I am afraid that, in view of the present state of Parliamentary business, I can hold out no hope of time being found this session for the proposed Children's Bill.

Prisoners and Solitary Confinement.

Mr. FREEMAN asked the Home Secretary the total number of prisoners who were in solitary confinement; the maximum period for any prisoner; the main causes for such treatment; and whether he was satisfied with the necessity of dealing with them in this way.—Mr. CLYNES replied: Solitary confinement was abolished long ago. Further, the period of employment in separation was reduced in 1919 to 14 days and was done away with altogether by my Prison Rules of April 4th last. There is now no class of prisoner which as such is excluded from associated labour. For breaches of prison discipline, prisoners are liable to be punished by close confinement, but after the first day on promise of good behaviour are allowed one hour's exercise daily and to attend chapel on Sundays. The maximum period which may be ordered by a prison governor is three days, by visiting justices 14 days, and by boards of visitors or directors of convict prisons 28 days. The modern tendency is to substitute loss of privileges for close confinement.

The Factory Inspectorate.

Major COLVILLE asked the Home Secretary whether he would furnish a statement showing the additional appointments made to the factory inspectorate following upon the report of the departmental committee on the factory inspectorate.—Mr. CLYNES replied: Following the departmental committee's report, the Government decided to increase the general inspection staff from 180 to 243, the medical staff from 5 to 8, the electrical staff from 5 to 12, and the engineering staff from 6 to 10, these increases to be spread over a period of five years. Up to the present the general inspection staff has been increased by 29, the medical staff by 3, the electrical staff by 5, and the engineering staff by 3.

FRIDAY, JUNE 12TH.

Poor-law Relief in Plymouth.

Mr. HORE-BELISHA asked the Minister of Health the number of persons in receipt of poor-law relief in the city of Plymouth, specifying categories for May, 1931.—Mr. GREENWOOD replied: The following statement gives the information asked for: Institutional relief (including casuals, but excluding rate-aided patients in mental hospitals), 576; domiciliary relief (excluding persons in receipt of domiciliary medical relief only), 5411; total, 5987.

MONDAY, JUNE 15TH.

The Grading of Milk.

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture whether, when considering with the Ministry of Health alterations in the regulations for the grading and designations of milk, and before coming to any decision he would consult the advisory committee of the Agricultural Council for England and Wales on this matter.—Miss SUSAN LAWRENCE replied: My right hon. friend has already received a report on this subject which was adopted by the Council of Agriculture for England last year. He will consider it in consultation with my right hon. friend, the Minister of Agriculture and Fisheries, but legislation would be necessary before any alterations could be made in the order as to the grading and designations of milk.

An All-in Insurance Scheme.

Sir GEORGE PENNY asked the Minister of Health whether the Government would consider the possibility of investigating an all-in insurance scheme, including unemployment and health benefits and pensions, to be applicable to a large section of the population.—Miss SUSAN LAWRENCE replied: This was one of the subjects considered by the Cabinet Committee which was set up to make a general survey of the National Insurance and Pensions Schemes, and is dealt with in their report, which is still under the consideration of the Government.

Medical Assistance in Flying Accidents.

Capt. BALFOUR asked the Under Secretary for Air if he was aware that after the flying accident resulting in the death of Mr. Kenneth George Murray at Marshall's Aerodrome during the Cambridge public flying display recently, 20 minutes elapsed before a doctor's services were procured; that when the injured pilot had been extracted, after 20 minutes work in the wreckage, a further period of waiting occurred before the ambulance arrived; if he would investigate the reason why neither medical nor ambulance transport services were available for instant use; whether his department had been consulted or had offered assistance in the organisation of this meeting; and if he would issue immediate regulations to prevent reoccurrence of such lack of safety facilities at all future public flying displays.—Mr. MONTAGUE replied: Inquiry is being made into the points mentioned, but the display at which this regrettable accident occurred was a privately arranged meeting held at an aerodrome licensed for private use only. One of the conditions of the licence is that "adequate first-aid appliances must be kept at the aerodrome."

TUESDAY, JUNE 16TH.

Army Horses Sold for Human Food.

Mr. DAY asked the Secretary for War the number of Army horses that had been cast during the 12 months ended to the last convenient date and sold for human consumption; and to whom they were sold.—Mr. T. SHAW replied: During the year ended May 31st last, 727 Army horses were sold as fit for human consumption. Such animals are destroyed in the presence of a military representative. The purchasers were Messrs. Harrison, Barber and Co., Ltd., London, and Messrs. Smith and Spalding, Ltd., London.

Mental Defectives in Scotland.

Mr. SINKINSON asked the Secretary for Scotland the number of mental defectives under 18 years of age in Scotland; how many were educable and uneducable; and how many were in institutions, criminal and otherwise.—Mr. WESTWOOD (Under Secretary of State for Scotland) replied: The duty imposed upon education authorities in Scotland by the Mental Deficiency and Lunacy (Scotland) Act, 1913, to ascertain what children residing within their areas are mentally defective within the meaning of the Act and to make provision for the education of those who are capable of receiving benefit from special instruction extends only to children between 5 and 16 years of age. According to the last return made by education authorities, the number of children between these ages who were ascertained by them to be mentally defective was 4910, of whom 3993 were ascertained to be educable and 917 uneducable. The number of educable mentally defective children receiving instruction in schools and institutions is 3938. Between the ages of 5 and 18 years there are 192 educable and 696 uneducable mental defectives certified under the Act and in residence in certified institutions, and 110 uneducable mental defectives under guardianship in private dwellings. There are no mental defectives under the age of 18 in residence in the State institution.

Unidentified Bodies in London Mortuaries.

Dr. HASTINGS asked the Home Secretary the number of unidentified bodies taken to the mortuaries in London in any one recent year.—Mr. CLYNES replied: The most recent year for which figures are available without special collection is 1927. Seventy-seven bodies of newly born infants and 74 other bodies found dead in that year remained unidentified two months after the end of the year. It is understood that these numbers fairly represent the average.

DONATIONS AND BEQUESTS.—Mrs. Eleanor Hood-Rowan, of "Rowantree," Warren-road, Blundellsands, left £34,094. After certain personal bequests the residue of the property was left as to: Two-ninths to Liverpool Infirmary for Children, Myrtle-street, Liverpool; two-ninths to the Children's Hospital at Leasowe for Crippled Children; two-ninths to Dr. Barnardo's Homes; two-ninths to the Waifs and Strays' Society; and one-ninth to the Institute for the Blind, Hardman-street, Liverpool.—Miss Ada Bilton, of Yew Tree, Kingswood-lane, Hindhead, Surrey, among other bequests, left her real estate at Shottermill, Hindhead, Surrey, to the Royal Hospital for Incurables, Putney, desiring that it should be used as a country home for patients of the hospital, and £2000 to Florence Nightingale Hospital for Gentlewomen, Lisson-grove, and £500 to the London Hospital for a cot, to be called the "Charles Bilton Cot."

MEDICAL NEWS

University of Cambridge.

On June 12th the following degrees were conferred :—

M.D.—S. M. Hattersley and S. R. Prall.
M.B. and B.Chir.—G. L. Ormerod and N. H. L. Ridley.
M.B.—Clifford Arthur.
B.Chir.—Arnold Barnsley.

The completion of 50 years' service by Mr. John Lane, chief assistant at the Anatomy School, was celebrated on June 2nd, when Mr. Lane was presented with a gold watch and chain and a cheque for 105 guineas. The Vice-Chancellor of the University attended, and Prof. J. T. Wilson presided over a large and enthusiastic gathering. Dr. W. L. H. Duckworth and Dr. A. Hopkinson recounted the progress of their appeal and referred especially to the coöperation of Cambridge men now holding prominent positions on the staffs of the principal London hospitals. Thanks to their efforts the presentation had been brought to the notice of a large number of medical graduates and of students who, having left Cambridge, were now engaged in clinical work in London. The total number of contributors was 1066.

University of Oxford.

Sir Wilmot Herringham, consulting physician to St. Bartholomew's Hospital, has been elected an honorary Fellow of Keble College.

Royal College of Surgeons of England.

An ordinary meeting of the Council was held on June 11th, with Lord Moynihan, the President, in the chair.

Diplomas of Fellowship were granted to the following candidates who were successful at the recent examination :—

Sidney Riddiough, M.B. Camb., Guy's; Edith May Hall, M.D. Lond., Royal Free; Richard Glyn Maliphant, M.D. Lond., Cardiff and Univ. Coll.; Joel Gabe, M.B. Lond., Westminster and London; Victor Mansfield Albuquerque, L.R.C.P., King's College; Gerald Newton Golden, M.B. Lond., London; Arthur Wallis Kendall, M.B. Lond., King's College and Westminster; Reginald Alfred King, M.B. Lond., St. Mary's and Guy's; Bangalore Madhavaraya Sundaravadanan, L.R.C.P. Lond., Madras and London; Alfred John Wilson Chamings, L.R.C.P., Cambridge and St. George's; Mark Coleman, M.B. Lond., University College; Thomas Russell Stevens, M.B. Camb., St. Thomas's; Alan Jardine Watson, M.B. Lond., Middlesex; William John Wilkin, L.R.C.P., Cambridge and St. Bart.'s; Solly Morris Cohen, L.R.C.P., Guy's; John Monro Gibson, L.R.C.P., Oxford and St. Thomas's; Beatrice Marion Willmott, L.R.C.P., Cambridge and Birmingham; Andrew Roy Banham, M.B. Camb., Middlesex; Robert Kenneth Bowes, M.B. Liverpool, St. Bart.'s; Gerald Herbert, L.R.C.P., Cambridge and St. Thomas's; Mohamed Abul Ela Anous, L.R.C.P. Lond., Cairo and Guy's; Said Ahmad, M.B. Punjab, London; Bruce Clarkson Rennie, M.B. N.Z., Otago and Guy's; Charles Bernays Melville, M.B. Melbourne, Guy's; Joyce Rewcastle Woods, M.B. Lond., Royal Free; Bernard Willis, M.D. Toronto, London; Alan Harding Lendon, M.B. Adelaide; John Arthur Rolland O'Regan, M.B. N.Z.; Maurice Backwell, M.B. Leeds; George Hayes Brandis, M.B. Melbourne, Guy's; Keith Buchanan Bridge, M.B. N.Z., Otago and St. Bart.'s; Herbert Alfred Brittain, M.B. Dublin; Eardley Lorimer Button, M.B. N.Z., Otago and Guy's; Ian Ayliffe Hamilton, M.B. Adelaide, London and St. Bart.'s; Hyman David Isaacs, M.D. Manitoba, Guy's; John Kelly, M.B. N.U.I., Cork and London; Michael Leo Kennedy, M.B. N.U.I., Dublin and Guy's; Alan Livingston Kerr, M.B. Liverpool; Samuel Norman Lytle, M.B. Belfast, St. Bart.'s; George Alexander Mason, M.B. Durham, St. Thomas's; James Hugh O'Donnell, M.B. Leeds, St. Bart.'s; Cyril Moulson Smithies, M.B. Leeds, Guy's; Graeme Gibson Talbot, M.B. N.Z., Otago; Thomas Thornton, M.B. St. Andrews, London; Wilfred Keith Welsh, M.B. Toronto, London.

Diplomas of Membership were granted to the following candidates who had previously passed the examinations of the Examining Board, and had now complied with the Regulations :—Partap Chandra (Punjab and Cambridge), Hilary S. M. Hadaway (Royal Free), and Thomas Standring (King's Coll. Hosp.).

At the primary examination for the Fellowship, held from June 2nd to 12th, for which 169 candidates presented themselves, 56 were approved and 113 were referred. The following are the names and medical schools of the successful candidates :—

F. W. Allinson, M.B. Lond., Univ. Coll.; S. O. Aylett, King's Coll.; J. E. M. Ayoub, St. Thomas's; P. S. Bassalvi, M.B. Punjab, King's Coll.; Diana J. K. Beck, M.B. Lond., Royal Free; D. L. C. Bingham, Edinburgh and Middlesex; E. W. Bintcliffe, St. Bart.'s; Edith J. R. Browne, Royal Free; K. L. Buxton, St. Thomas's; W. G. Campbell, M.B. St. Andrew's, Middlesex; S. G. Clayton, King's Coll.; Gladys E. Clyne, Royal Free; E. A. Danino, St. Bart.'s; G. B. Davis, King's Coll.; Rosalind M. S. Derham, Bristol and King's Coll.; K. C. Eden, Univ. Coll.; C. G. Ferguson, M.D., Queen's Univ., Kingston; W. J. L. Francis, M.B. Glasg., St. Mary's; P. E. Glynn, M.R.C.S., Leeds, Middlesex, and King's Coll.; W. H. Graham, M.B. Glasg.; T. F. R. Griffin, St. Mary's; J. O. Harrison, M.R.C.S., St. Bart.'s; H. E. James, M.B. Lond., Univ. Coll. and Middlesex; E. C. Janes, M.B., Toronto; E. J. Javeri, M.B. Bombay, London; J. H. Kellgren, Univ. Coll.; H. Kelson, M.B. Sheff., St. Mary's and Univ. Coll.; C. A. Keogh, M.B. Belfast, Middlesex; B. Kettle, M.R.C.S., St. Bart.'s; S. Krantz, M.B. Adelaide, Middlesex; A. F. Lasrado, M.B. Madras, Middlesex; N. J. Logie, M.B. Aberd.; C. J. Lord, M.B. Belf.; D. McMillan, M.B. N.Z., St. Mary's; C. P. Malley, M.B. Dub.; J. A. Martinez, M.B. Liverp.; W. Merrington, Univ. Coll.; S. N. Mistri, M.B. Bombay, Middlesex; G. A. G. Mitchell, M.B. Aberd.; A. J. Moffett, M.B. Birm.; K. G. Munsif, M.B. Bombay, St. Bart.'s and Middlesex; F. D. Murphy, M.B. N.U.I., Univ. Coll., Cork; R. P. Osborne, M.B. Manch.; B. H. Page, Cambridge; C. G. Patel, M.B. Bombay, Middlesex; E. E. Price, M.B. Melb., Middlesex; R. S. Richmond, St. Mary's; N. W. Roberts, M.B. Liverp.; G. S. Robinson, Middlesex; M. D. Sheppard, M.B. Lond., Univ. Coll.; M. A. H. Siddiqi, M.B. Lucknow, St. Bart.'s; C. B. Singh, M.B. Lucknow, Edinburgh; U. P. Sinha, M.R.C.S., Guy's and Middlesex; E. C. N. Strong, M.R.C.S., Birmingham and Middlesex; W. D. Walker, M.B. Adelaide, Univ. Coll. and Middlesex; Maureen D. Willmott Evans, M.B. Lond., Royal Free.

Mr. R. M. Vick, of St. Bartholomew's Hospital, was elected a member of the Court of Examiners for a period of five years in the vacancy occasioned by the retirement of Mr. L. Bathe Rawling.

The following examiners were elected for the ensuing year :—

Dental Surgery.—Surgical Section: L. Bathe Rawling, H. S. Clogg, Russell J. Howard, Gwynne Williams, John Murray, C. E. Shattock, and Cecil P. G. Wakeley.

Examiners for the Fellowship.—Anatomy: P. N. B. Odgers, William Wright, J. Ernest Frazer, and J. B. Hume; Physiology: C. Lovatt Evans, R. J. S. McDowall, John Mellanby, and G. A. Buckmaster.

For the Diplomas of L.R.C.P., M.R.C.S.—Elementary Biology: James P. Hill, T. J. Evans, George P. Mudge, and C. C. Hentschel; Anatomy: R. Bramble Green, W. E. Le Gros Clark, and H. A. Harris; Physiology: E. B. Verney and Hamilton Hartridge; Midwifery: T. B. Davies, Aleck W. Bourne, Sidney Forsdike, and Louis Carnac Rivett; Pathology: C. H. Fagge, C. E. Shattock, William Bulloch, and R. G. Canti.

Diploma in Public Health.—Part I.: J. W. H. Eyre; Part II.: C. W. Hutt.

Diploma in Tropical Medicine and Hygiene.—Pathology and Tropical Hygiene: Maj.-Gen. D. S. Harvey.

Tropical Medicine and Surgery.—G. Carmichael Low.

Diploma in Ophthalmic Medicine and Surgery.—Part I.: W. S. Duke-Elder, C. B. Goulden; Part II.: R. Affleck Greeves.

Diploma in Psychological Medicine.—J. G. Greenfield.

Diploma in Laryngology and Otology.—Part I.: W. M Mollison, Norman Patterson; Part II.: W. G. Howarth.

Diploma in Gynæcology and Obstetrics.—J. D. Barris.

University of Bristol.

At recent examinations the following candidates were successful :—

M.D.

Sukhasagar Datta.

FINAL EXAMINATION (PART II.) FOR M.B., CH.B.

With Second-class Honours.—Elizabeth S. G. Owen.

Pass.—*L. P. Ashton, J. E. Brown, †L. R. Jordan, and R. H. Moore. Group II. (completing examination): Eveline M. D. M. Collinson and Rowena M. Hickman. Group I.: W. A. F. Taylor. Group II.: O. J. P. Bollon.

* Distinction in Surgery and Obstetrics.
† Distinction in Medicine.

FINAL EXAMINATION FOR B.D.S.

M. J. Ryan.

FINAL EXAMINATION FOR L.D.S.

E. V. O'Hara.

King Edward's Hospital Fund for London.

The Prince of Wales presided last week at the annual council meeting of this Fund, when a message was read from the King expressing His Majesty's satisfaction that the fund was able in 1930 to provide the increased distribution of £266,000 out of the current income of the year. In 1929 the distribution was £250,000. The Prince spoke of his fear that the present year would be an anxious one for the voluntary hospitals, but he took courage from the fact that the voluntary system had survived many periods of depression in the past, and that in recent years income had grown steadily. He mentioned "an entirely new and unprecedented item"—a special trust fund of £20,000 given by an anonymous donor, the income of which is to be used primarily to assist a hospital to pay off its building debt. The legacy of £50,000 from the late Sir Otto Beit brought the total munificence of Sir Otto to the Fund to £106,000. It was explained that the new trust fund was to be applied to the reduction of capital charges on hospitals in Deptford, Greenwich, Lewisham, and Woolwich, and that the first beneficiary will be the Miller General Hospital. The management committee is ignorant of the identity of the donor.

Epsom College.

St. Anne's Scholarship.—The council will shortly elect a girl to a St. Anne's Scholarship of £120 a year. Candidates must not be less than 9 years of age on July 29th, and must be orphan daughters of medical men who have been for not less than five years in independent practice in England or Wales. Application must be made by July 2nd, on a form to be obtained from the secretary of the College, at 49, Bedford-square, London, W.C. 1.

London School of Hygiene and Tropical Medicine.

The next series of eight lectures and demonstrations on tropical hygiene, intended for men and women outside the medical profession proceeding to the tropics, will be given by Lieut.-Colonel G. E. F. Stammers from July 6th to 10th. Particulars may be had from the secretary of the school, Keppel-street, Gower-street, W.C. 1.

Diploma in Psychological Medicine.

The University of London has added Stoke Park Colony, Stapleton, Bristol, to the list of institutions recognised for practice under Regulation 3 for the D.P.M. for candidates offering mental deficiency as their special branch under Regulation 4.

Royal Medico-Psychological Association.

The ninetieth annual meeting of this association will be held from July 8th to 11th at the Royal College of Physicians, Dublin, under the presidency of Dr. R. R. Leeper. On July 10th the association will be received at the Vice-Regal Lodge by the Governor-General and Mrs. McNeill.

Royal Society of Medicine.

Nichols Prize.—At the last meeting of the council this prize was awarded to Dr. John Smith, of Aberdeen, and to Dr. R. R. Armstrong and Mr. H. Burt-White (a conjoint contribution), of St. Bartholomew's Hospital. The prize is offered, in accordance with the will of the late Dr. Robert Thomas Nichols, once every three years, for the most valuable contribution by a British subject towards "the discovery of the causes and the prevention of death in childbirth from septicæmia."

The *Jenner Medal* was awarded to Dr. T. H. C. Stevenson, Medical Statistical Officer at Somerset House. It is given to persons whose work has been pre-eminent in the prevention and control of epidemic disease.

University of Manchester.

The Council have appointed Dr. Stephen Leonard Baker as Procter professor of pathology and pathological anatomy, in succession to Prof. J. Shaw Dunn.

Dr. Baker qualified from the London Hospital in 1913. After holding various junior appointments in that hospital, he was for three years during the war a temporary surgeon in the Royal Navy. Since 1922 he has held the post of senior assistant in the Bland-Sutton Institute of Pathology at the Middlesex Hospital, and in 1928 was appointed Reader in Morbid Anatomy and Histology in the University of London. His researches cover a wide field in bacteriology and pathology. Recently it has been chiefly concerned with problems connected with malignant disease.

Society for Constructive Birth Control.

The medical committee of the Constructive Birth Control Clinic has arranged special sessions devoted to demonstrating to medical practitioners the practical details of contraceptive technique, the insertion of various types of pessaries, the determination of sizes used in various circumstances, &c. These demonstrations are combined with brief lectures in sequence made by the president of the society (Mrs. Marie Stopes, D.Sc.), various members of the medical committee, and the midwife nurse-in-charge at the clinic. The leading methods used in clinical technique will be covered in one afternoon. Sessions will be held from 2.30 till 5 P.M. on the first Wednesdays in each month. Previous application should be made in writing to the hon. secretary of the Constructive Birth Control Clinic, 108, Whitfield-street, London, W. 1.

Oxford Ophthalmological Congress.

The twenty-first annual meeting of this congress will begin at Oxford on Thursday, July 9th. After the opening by Mr. A. B. Cridland, the Master, a symposium on the Diagnosis of Intracranial New Growths will be introduced by Mr. Leslie Paton, the other speakers including Sir Percy Sargent, Dr. H. M. Traquair, Mr. Norman Dott, and Prof. Artur Schüller (Vienna). On the same afternoon Prof. G. Elliot-Smith, F.R.S., will give an address on the Evolution of the Instruments of Vision. In the morning of Friday, the 10th, Dr. Baillart (Paris) will speak on Tonometry, and Mr. Philip Adams will deliver the Doyne memorial lecture, under the title of an Ophthalmological Mélange. In the afternoon Mr. James Craig and Prof. Schüller will open a discussion on Penetrating Wounds of the Eye. The meetings will end at midday on Saturday.

National Association for the Prevention of Tuberculosis.

On Thursday next the seventeenth annual conference of the National Association for the Prevention of Tuberculosis opens at Margate under the chairmanship of Sir Arthur Stanley. The proceedings, which will continue till Saturday, will be devoted to the Protection of the Child from Tuberculosis.

London Hospital Medical College.

The distribution of prizes will be made by Lord Macmillan on Wednesday, June 24th, at 3 P.M., in the library of the College.

Gloucester Royal Infirmary Extension.

On Thursday last week Princess Mary laid the foundation-stone of extensions which will cost £40,000.

A Memorial Ward at Wells.

There was recently opened at Wells cottage hospital a maternity ward as a memorial to Miss Phyllis Aileen Manning who died, at the age of 25, after six months' work as a medical missionary in Uganda. The ceremony was performed by Mrs. Wynne Wilson, wife of the Bishop of Bath and Wells. Miss Manning was the daughter of the senior honorary surgeon of the hospital.

"Royal" Hospitals.

The committee of the Bolton Infirmary and Dispensary have decided to petition the Home Secretary for the right to prefix the word "Royal" to the title of the hospital. The reasons given are that, with such a name, it would be easier to obtain doctors and nurses, and that applicants for positions on resident medical staffs "seem to prefer a hospital which has the word 'Royal' prefixed."

Coventry and North Warwickshire Hospital.

The Hospital Saturday Fund committee has presented to this institution an electrocardiograph apparatus in memory of the late Mr. G. Hadfield, the originator of a movement for its acquisition, and it was recently unveiled by his widow. At the ceremony it was stated that out of 1672 deaths in the city of Coventry last year 311 were attributed to heart disease.

Work of Orthopædic Hospitals.

The annual report of the Prince of Wales's Orthopædic Hospital, Cardiff, and its country branch at Crossways, Cowbridge, states that last year a total of 665 patients were admitted; there were 2173 out-patients.—Speaking last week at the cripples' training centre of the Manchester, Salford and District Council for Cripples, at Grangethorpe, Sir Robert Jones commented upon the pressing need for training colleges for those injured at work and in other ways, whose number in the last ten years exceeded the war-time total.

Glasgow Dental Hospital.

The Earl of Home, presiding at the annual meeting of the Incorporated Glasgow Dental Hospital last week, referred to the very great increase in service to the community which would be made possible by the new home for the hospital. They would have 70 operating chairs each with self-contained surgical unit, instead of 35 as before. Children would be accommodated in a special department and an X Ray plant would be installed. The laboratory would be twice the size, and provision would be made for research. In response to the appeal for £90,000 to meet the cost of equipping the new hospital, nearly £40,000 had already been received, but he made urgent appeal to the citizens to aid the hospital so that it might open free of debt. £2000 had been promised by the Dental Board of the United Kingdom on condition that £1700 was raised in Glasgow by July 1st, and they were still £400 short of this quota.

Hospital Treatment for the Middle Classes.

Sunderland Royal Infirmary has adopted a scheme to enable middle-class patients to avail themselves of all its private ward facilities on payment of £1 10*s.* per annum. The scheme applies to persons whose incomes fall within the following limits: Single adult persons under £300 per annum; married couples without children under 16, £400 per annum; widows and widowers with a child or children under 16, £400 per annum; married couples with a child or children under 16, £500 per annum. Single persons between the ages of 16 and 21 years who are not in receipt of more than £100 per annum will be admitted into the scheme on payment of an annual premium of £1. People with incomes above the insurance scheme limits may be admitted to private rooms, the charge for which will be not more than £5 5*s.* per week, with a minimum of £2 2*s.* The premium covers all medical and surgical nursing and maintenance costs while the patient is in the infirmary, but does not cover the cost of any special appliances, drugs, or instruments which may be ordered for treatment after discharge.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. J. Cussen, E. O'Reilly, and T. G. B. Crawford to be Surg. Lt.-Comdrs.

The following appointments have been made: A. B. Clarke to *Vivid* for R.N. Barracks, Devonport.

Surg. Lt. R. G. Dingwall to *Herald*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. A. G. Reade to *Repulse*.

Surg. Lt.-Comdrs. J. E. Purves transferred to London Divn.; and S. W. Davidson to *Frobisher*.

Surg. Lts. F. W. Chippindale transferred to Sussex Divn.; and F. D. Manners (D), to *Pembroke*.

Surg. Lt. (D).—W. R. Young to *Victory* for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS.

Maj. J. W. Houston is placed on the half pay list on account of ill-health.

Capt. S. Griffin, late 3rd Bn., R. Ir. Regt., is granted a temp. commn. in the rank of Lt. and temporarily relinquishes the rank of Capt.

F. K. Bush to be Lt. (on prob.).

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. P. J. Stokes from Active List to be Capt.

ROYAL AIR FORCE.

Lt. R. N. Kinnison (T.A.R.O.) is granted a short service commission as a Flying Officer for three years on the Active List.

RESERVE OF AIR FORCE OFFICERS.

Flying Officer S. S. Proctor relinquishes his commission on completion of service.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

THURSDAY, June 25th.—11 A.M.–5.30 P.M., Exhibition of Instruments. UROLOGY. 5.30 P.M., Discussion: The Treatment of Inoperable Carcinoma of the Bladder. Opener: Mr. Ogier Ward.

FRIDAY.—OTOLOGY. Summer Meeting at Oxford. 2 P.M., Paper: Dr. W. T. Hillier: The Lateral Line of Sense Organs. 5 P.M., Demonstration: Dr. M. MacNaughton Jones: Models illustrating the Physiology of the Ear. Papers: Mr. E. A. Peters: A Test for Maximum Tuning Fork Hearing. A Case of Cerebellar Abscess Drained Anterior to the Lateral Sinus.

SATURDAY.—OTOLOGY. Summer Meeting at Oxford continued (see above). 10.30 P.M., Open discussion: The Physics of Sound and the Physiology of Hearing.

MEDICO-LEGAL SOCIETY.

THURSDAY, June 25th (at 11, Chandos-street, Cavendish-square, W.), Dr. T. H. Blench: Crime Investigation in Paris, followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 22nd, to SATURDAY, June 27th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. M.R.C.P. Evening Lecture at 8.30 P.M. Tues., Dr. R. A. Young: Some Lung Conditions Simulating Pulmonary Tuberculosis. Fri., at 10, Beford-square, W.C., at 8.30 P.M., Dr. Knyvett Gordon: The Diagnosis and Treatment of Acute Bacterial Infections, illustrated by epidiascope, and followed by a laboratory demonstration.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Tues., 3 P.M., Demonstration of Surgical Cases by Mr. McNeill Love. No fee for attendance.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Thur., 2 P.M., Demonstration in O.P. Department by Dr. Burton Wood. No fee for attendance.—CHILDREN CLINIC AND OTHER HOSPITALS. A Course of Diseases of Children, lectures and demonstrations. Second week.—HOSPITAL FOR TROPICAL DISEASES, Gordon-street, W.C. Second week of Course in Tropical Medicine, all day.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Wed., at 4.30 P.M., Lecture by Dr. Slot on Recent Advances in Treatment of Gastro-intestinal Disease.—ROYAL ALBERT DOCK (Seamen's Hospital Society), Greenwich. Course of demonstrations on Fractures, Tues. and Fri., Mr. Ernest Griffiths; Wed., Mr. Hope Carlton: time 4.30 P.M.—NATIONAL HOSPITAL FOR DISEASES OF HEART, Westmoreland-street, W. Intensive Course in Cardiology for two weeks.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Intensive Course in Medicine, Surgery, and Specialties. Two weeks.—Further particulars from Fellowship of Medicine.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, June 22nd.—10 A.M., Gynæcological Ward Visit, Genito-Urinary Operations, Skin Department. 11 A.M., Surgical Ward Visit. 2 P.M., Surgical Ward Visit. Medical, Surgical, Eye, Gynæcological Out-patients.

TUESDAY.—9.30 A.M., Operations. 10 A.M., Medical Ward Visit, Dental Department. 11 A.M., Throat Operations. 11.30 A.M., Surgical Clinical Demonstrations. 2 P.M., Medical, Surgical, Throat Out-patients, Operations, Medical Ward Visit.

WEDNESDAY.—10 A.M., Medical Ward Visit, Children's Medical Out-patients. 2 P.M., Medical, Surgical, and Eye Out-patients, Gynæcological Operations. 4.45 P.M., Venereal Diseases.

THURSDAY.—10 A.M., Neurological Department. 11.30 A.M., Treatment of Fractures. 2 P.M., Medical, Surgical, and Eye Out-patients, Genito-Urinary Department. Operations.

FRIDAY.—10 A.M., Medical Ward Visit, Skin and Dental Departments. 12 noon, Medical Lecture. 2 P.M., Medical, Surgical, and Throat Out-patients. Operations.

SATURDAY.—9 A.M., Throat Operations. 10 A.M., Medical Ward Visit, Surgical and Children's Medical Out-patients.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, June 22nd.—12 noon, Dr. Greenfield: The Cerebro-spinal Fluid. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Symonds: Minor Mental Disorders.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Von Recklinghausen's Disease.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Neurosyphilis (2).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Collier: Muscular Atrophy.

CHARING CROSS HOSPITAL MEDICAL SCHOOL POST-GRADUATE COURSE.

SUNDAY, June 21st.—10.45 A.M., Mr. Norman C. Lake: Surgical Questions and Answers. 11.45 A.M., Dr. J. Russell Reynolds: Radium.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel-street, Gower-street, W.C.

FRIDAY, June 26th.—5 P.M., Sir Thomas Legge: Industrial Poisonings.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.

TUESDAY, June 23rd.—5 P.M., Prof. Hamilton Hartridge: The Theory of Hearing.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, June 23rd.—3.15 P.M. (at the Royal Chest Hospital), Dr. Saxby Willis: Artificial Pneumothorax (Illustrated by cinema film).

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, June 25th.—3 P.M., Dr. Douglas McAlpine will demonstrate to Registered Practitioners.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, June 24th.—4 P.M., Dr. Macdonald Critchley: Migraine.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

WEDNESDAY, June 24th.—Annual general meeting. Clinical Cases.

NATIONAL ASSOCIATION FOR PREVENTION OF TUBERCULOSIS.

THURSDAY, June 25th, to SATURDAY.—(At Margate): Annual conference. Discussions on the Protection of the Child from Tuberculosis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, June 26th.—4 P.M., Mr. Gill-Carey: Operative Treatment of Sinusitis.

UNIVERSITY OF BIRMINGHAM.

TUESDAY, June 23rd.—3.30 P.M. (at the General Hospital), Dr. T. L. Hardy: Colon Spasm and Colitis.

WEDNESDAY.—4 P.M. (in the Large Theatre of the Medical Faculty, Edmund-street), Sir Hubert Bond: Some Correlations between General and Psychological Medicine. (Last Lecture.)

FRIDAY (at the Queen's Hospital).—3.30 P.M., Dr. Cyril Maguire: Demonstrations of Medical Cases.

Appointments

ALLEN, DOROTHY, L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., has been appointed Asst. Medical Officer of Health, Barrow-in-Furness.

CRAIG, J. C. B., M.D., Ch.B. Edin., D.P.H., Asst. Medical Officer of Health, Carlisle.

FRAZER, W. M., M.D., Ch.B. Liverp., D.P.H., Medical Officer of Health, Liverpool.

Sheffield Royal Infirmary: PLATT, R., M.D., Ch.B. Sheff., Hon. Asst. Physician; FAWCETT, A. W., M.B., Ch.B. Edin., F.R.C.S. Eng., Hon. Asst. Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: WORSLEY, R. C., L.R.C.P. Lond., M.R.C.S. (Mitcheldean, Gloucester); FORSYTH, J. M., M.B., Ch.B. Glasg. (Farnborough (No. 1) District); GIBSON, G. M., M.B., Ch.B. Edin. (Cromarty, Ross and Cromarty).

Vacancies

For further information refer to the advertisement columns.

Aberdeen County.—Asst. M.O.H. £500.
All Saints' Hospital for Genito-Urinary Disease, 91, Finchley-road, N.W.—H.S. At rate of £150.
Barnsley, Beckett Hospital and Dispensary.—H.P. £200. Also Cas. O. £250.
Birmingham and Midland Eye Hospital.—Res. Surg. O. £150.
Birmingham City Babies' Hospital.—Res. M.O. At rate of £100.
Birmingham, Midland Hospital, Easy-row.—H.S. £150.
Birmingham University.—Walter Myers Travelling Scholarship. £300.
Blackburn Royal Infirmary.—Fourth H.S. £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.
Bolton Infirmary and Dispensary.—Two H.S.'s. Each £150.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton Poor-law Institution.—Res. M.O. £850. Also Res. Sen. Asst. M.O. £400. And Visiting Surg. Spec. £325.
Bristol General Hospital.—Two H.P.'s, Two H.S.'s, Res. Obstet. O., and H.S. to Spec. Depts. All at rate of £80. Also Cas. H.S. At rate of £100.
Brookfield Orthopædic Hospital, Hale End, Woodford Green.—Anæsthetist.
Bury St. Edmunds, West Suffolk General Hospital.—H.P. and Obstet. O. £150.
Canterbury, Kent and Canterbury Hospital.—H.P. and H.S. Each at rate of £125.
Cardiff, Welsh National School of Medicine.—Jun. Asst. in the Medical Unit. £300.
Central London Ophthalmic Hospital, Judd-street, W.C.—Sen. and Jun. H.S. £120 and £100 respectively.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.
Coborn School for Girls, 29–33, Bow-road, E.—Doctor. £50.
Connaught Hospital, Walthamstow, E.—Res. H.P. At rate of £100.
Coventry, Coventry and Warwickshire Hospital.—Res. Cas. O. £125.
Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £150.
Dudley, Guest Hospital.—Two H.S.'s. £160–£170.
Durham County Hospital.—H.S. £150.
Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.
East Lothian, South-Eastern Counties of Scotland Joint Sanatorium, East Fortune.—Asst. M.O. £250.
Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. Radiologist. £100. Also 2nd H.S., and Obstet. Asst. Each at rate of £50.
Evelina Hospital for Children, Southwark, S.E.—Cas. and Out-Patient Officer. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.P. and H.S. to Special Depts. Each at rate of £150.
Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £125 and £100 respectively.
Gloucester, Gloucestershire Royal Infirmary, &c.—H.S. At rate of £120.
Grimsby and District Hospital.—Res. M.O. £200.
Grosvenor Hospital for Women, Vincent-sq., S.W.—Res. M.O. At rate of £100.
Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—H.S. and H.P. Each at rate of £100.
Hertford County Hospital.—H.S. At rate of £200.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Hull Royal Infirmary.—3rd H.S. At rate of £150.
Indian Medical Service.—Commissions.
Inverness, Royal Northern Infirmary.—Two H.S.'s. Each at rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £120.
Islington Institution, St. John's-road, N.—Temp. Asst. M.O. At rate of £600.
Jewish Health Organisation, 19, Dorset-square, N.W.—Hon. Asst. Psychiatrist.
King's College Hospital, Denmark Hill, S.E.—Jun. Ophth. Surgeon.
King's Lynn, West Norfolk and King's Lynn General Hospital.—H.P. At rate of £125.
Leeds, Herzl Moser Hospital.—R.M.O. £200.
Liverpool, Alder Hey Children's Hospital, West Derby.—Sen. Asst. Res. M.O. £400.
Liverpool, Smithdown-road Hospital.—Res. Asst. M.O. £200.
London Hospital, E.—First Asst. and Reg. to Children's Dept. £300.
London Jewish Hospital, Stepney Green, E.—Asst. Gynæcologist.
London University.—Examinerships.
Longton Hospital, Staffordshire.—H.S. £120.
Manchester Royal Infirmary.—H.S. At rate of £100–£200. Also Res. Surg. Reg. to Out-patients. At rate of £150.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. At rate of £100.
National Hospital, Queen-square, W.C.—Hon. Asst. Radiologist. Also Registrar and Res. M.O. Each £200.
National Hospital for Diseases of Heart, Westmoreland-street, W.—Pathologist. £250.
Newcastle General Hospital.—Two H.P.'s and Three H.S.'s. All at rate of £100.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Res. Anæsthetists. Each at rate of £300.
Newport, Mon., Royal Gwent Hospital.—Jun. Res. M.O. £136.
Norwich City.—Asst. M.O.H., &c. £500.
Nottingham City Mental Hospital.—Jun. Asst. M.O. £350–£400.
Nottingham General Hospital.—H.S. At rate of £150. Also Casualty Officer. At rate of £200.
Oldham Royal Infirmary.—H.P. and Cas. O. Each at rate of £175.
Paddington Green Children's Hospital, W.—Hon. Surgeon to Ear, Nose, and Throat Dept.
Plymouth Central Hospital.—H.S. At rate of £150.
Plymouth, City Hospital.—Radiographer. £240–£280.
Portsmouth City.—Deputy M.O.H. £720.
Queen Mary's Hospital for the East End, E.—H.P., H.S. Also H.P. and Res. Anæsthetist. Each at rate of £120.
Queen's Hospital for Children, Hackney-road, E.—H.S. At rate of £100. Two Anæsthetists. Each £25. Also Res. M.O. £200.
Reading, Royal Berkshire Hospital.—H.P. and Res. Anæsthetist. £150.
Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.
Rotherham Hospital.—Cas. H.S. £150.
Rotherham, Oakwood Hall Sanatorium.—Asst. M.O. £300.
Royal Free Hospital, Gray's Inn-road, W.C.—Unit Anæsthetist, £150. Also Clin. Assistantships to Spec. Depts.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—Asst. Reg. Surg. for Country Branch, Stanmore. £350.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £200. Also H.S. At rate of £100.
St. Alfege's Hospital, Vanbrugh-hill, Greenwich.—Asst. M.O. At rate of £250.
St. Leonard's-on-Sea, Buchanan Hospital.—Jun. H.S. At rate of £125.
St. Mary's Hospital Medical School, W.—Asst. Director to Surgical Unit.
St. Thomas's Hospital.—Two Surgical Registrars. Also Asst. in Dept. of Psychological Medicine.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Registrar. £130.
Sheffield Children's Hospital.—Whole-time Registrar-Pathologist. £350. Also 3rd Res. M.O. At rate of £80.
Sheffield, Nether Edge Hospital.—Asst. M.O. £350.
Sheffield Royal Infirmary.—H.S., Ophth. H.S., Asst. Aural and Ophth. H.S. Each at rate of £80.
Stourbridge, Corbett Hospital.—Res. H.S. At rate of £200.
Swansea General and Eye Hospital.—H.P. £150.
Walsall General Hospital.—H.S. At rate of £150.
West End Hospital for Nervous Diseases, Gloucester-gate, Regent's Park, N.W.—Jun. H.P. At rate of £100.
Wolverhampton County Borough.—Asst. M.O. £550.
Wolverhampton Royal Hospital.—H.S. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Golspie (Sutherland).

Births, Marriages, and Deaths

BIRTHS.

IRWIN.—On June 5th, at Devonshire-street, W., the wife of W. K. Irwin, M.D., F.R.C.S., of a son (prematurely).
STRONACH.—On June 10th, at Nottingham, Marjorie, the wife of Ian D. Stronach, F.R.C.S. Ed., Mansfield, of a son.

MARRIAGES.

DAVIES—MCCALDIN.—On June 11th, at the Presbyterian Church, Monaghan, Ireland, John Llewellyn Davies, F.R.C.S., Wellington Circus, Nottingham, to Dorothy Grace, eldest daughter of Mr. W. A. McCaldin, Glenview, Monaghan.
HEWETSON—GODSON.—On June 10th, at the Parish Church, Cheadle, Cheshire, James Charlesworth Hewetson, M.B., B.S., to Enid Frances Entwistle, youngest daughter of Dr. and Mrs. J. H. Godson, of Cheadle, Cheshire.
SATCHWELL—WEIR.—On June 8th, at the Parish Church, Milford Haven, Thomas Allen Satchwell, L.D.S., to Sidney Marion Weir, B.A., L.D.S.
STARLING—CRACKNELL.—On June 13th, at St. Paul's, Rusthall, Dr. E. C. W. Starling, to Nancy Cracknell, daughter of Mr. and Mrs. Cracknell, of Tunbridge Wells.
WELLISH—MANNERS.—On June 11th, at St. James's Church, Riddlesdown, Gilbert Charrington Wellish, F.R.C.S., of Croydon, to Edith, widow of Mr. Ramsay Manners.

DEATHS.

BRAITHWAITE.—On June 8th, Edward Ashe Braithwaite, M.B., C.M. Edin., J.P., of West Croft, Egremont, Cumberland, in his 64th year.
BROOKMAN.—On June 12th, Hubert Brookman, M.R.C.S., L.R.C.P., D.P.H., of Woodside Park-road, North Finchley, N., and late of Potters Bar, aged 36.
FERGUSON.—On June 8th, at the West London Hospital, Andrew James Ferguson, M.A., M.B., Ch.B., of Holland-road, Kensington, W., aged 44.
GRANT.—On June 11th, at Willesden Hospital, Charles Hamilton Russell Grant, L.D.S. R.C.S. Eng., of Cuckoo-hill, Lodge, Eastcote, aged 50.
MACFIE.—On June 9th, at a London nursing home, Ronald Campbell Macfie, M.A., M.B., C.M., LL.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

GLASGOW ROYAL MENTAL HOSPITAL.—Permission has been given for the name of the Glasgow Royal Asylum for Lunatics to be changed to "The Glasgow Royal Mental Hospital."

NOTES, COMMENTS, AND ABSTRACTS

The new arrangement in being at the Sussex Hospital for Women and Children.

LENGTHWAYS ARRANGEMENT OF BEDS IN HOSPITAL WARDS.

IN the John Howard wing of the new Sussex Hospital for Women and Children, Brighton, opened by Princess Mary last month, may be seen an arrangement of beds, familiar enough in America, but novel in this country where it is included in the design for the Birmingham hospitals centre [1] and in the specification for the new Southend hospital. The beds are placed on each side of the ward parallel with the outside wall, adjacent head ends being separated by glazed screens running out at right angles from the wall. Each patient thus lies side ways to the light, privacy being ensured by the ease with which curtains may be drawn across the foot of the bed and on the corridor side.

Messrs. Adams, Holden and Pearson, the architects, are responsible for the introduction in this hospital of screens, which are made by the Crittall Manufacturing Co., Ltd., and have polished plate glass in the upper half and metal panels below the level of the bed-head rail. Their appearance is the same from both sides, the glass being secured between two sets of teak beads rounded at the corners of the panes to prevent the accumulation of dust. The metal panels are of one-eighth inch steel plate fixed flush with the framing on both sides. The screens are connected by rods which carry curtains, thus saving the bother of portable screens. To make cleaning easy there is a space of one foot between the bottom of the screen and the floor, and six inches between the jamb and the wall to which it is fixed. Each screen has three main supports of square-tubular shape; these are clamped to the floor and accommodate the wireless leads, the plug-points for which are placed in the metal panels. The electric light wiring is carried along the top of the screen in the channel of the outside framing, and is covered by a removable metal finishing strip. An elevation of the screen and a plan of a ward unit appeared in our previous note on the Birmingham hospitals centre.

The photograph well illustrates the cheerful effect of a ward so arranged and the fact that every bed retains its own light and ventilation even when screened. No patient is now compelled to look straight into the light. A further advantage not shown in the picture is that the radiators beneath the windows are situated nearer to the foot than the head of the beds.

[1] See THE LANCET, 1930, i., 318.

AN AUTHORITATIVE LIST NEEDED.

To the Editor of THE LANCET.

SIR,—A correspondent signing himself "Physician" inquires in your issue of May 16th (p. 1118) where he can obtain manipulative treatment for his patients. Perhaps it would be useful for him to know that at the Royal National Orthopædic Hospital manipulative surgery in all its branches has been carried out since the institution of the hospital; that during the past year (1930) 832 manipulations for all the conditions mentioned in his letter were performed by the visiting surgeons, and that instruction is given annually in these methods at post-graduate courses here. Moreover, these methods are practised by all orthopædic surgeons and are now taught to students at the medical schools.

I am, Sir, yours faithfully,

ARTHUR MORLEY,
Secretary, Royal National Orthopædic Hospital.

234, Great Portland-street, W. 1, June 11th, 1931.

A TREATMENT FOR CARBUNCLE.

A RECENT annotation (June 6th, p. 1254) described a method of treating carbuncle and other indolent infections by inducing active capillary hyperæmia round the lesion. The agent employed in Prof. Bier's clinic in Berlin is a pure solution of arnica sold under the name of Arnusit. We are informed that it is prepared by Willmar Schwabe, of Leipzig, and that W. Bredt, Ltd., 38, Great Tower-street, London, E.C.3, are his representatives and have a consignment for distribution in this country.

THE DANGER SIGNS OF DISEASE.[1]

THE author of a valuable little book, who has had over 35 years' experience of busy general practice, states that it is intended for the layman, but he might well have added that young general practitioners would also find it useful. It is written in a simple and popular style and is full of sound common sense. Practically all symptoms of disease are included, and the author gives over and over again the good advice—to consult a doctor. The layman who reads this book will be warned of the signs indicating caution or danger, and will be led to seek medical advice at an early stage.

[1] The Danger Signs of Disease—A Book for the Layman By a Scotch Doctor. London: St. Catherine Press. 1931. Pp. 90. 2*s*.